DOCUMENT RESUME

ED 448 982 RC 022 773

AUTHOR	Vincent, Susan, Ed.
TITLE	The Multigrade Classroom: A Resource Handbook for Small, Rural Schools. Book 5: Instructional Delivery and Grouping.
INSTITUTION	Northwest Regional Educational Lab., Portland, OR, Rural Education Program.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.; Institute of International Education, New York, NY.
PUB DATE	1999-11-00
NOTE	85p.; Based on a 1989 publication of the same name by Bruce A. Miller. For related books in the series, see RC 022 770-775. Cover title varies.
AVAILABLE FROM	These publications are also available online as PDFs at [http://www.nwrel.org/ruraled/index.html#multigradepubs}.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Class Organization; Classroom Environment; Classroom Techniques; *Computer Uses in Education; *Cooperative Learning; Elementary Education; *Group Instruction; *Grouping (Instructional Purposes); Individualized Instruction; *Multigraded Classes; *Teaching Methods
IDENTIFIERS	Teacher Planning

ABSTRACT

In multigrade instruction, children of at least a 2-year grade span and diverse ability levels are grouped in a single classroom and share experiences involving intellectual, academic, and social skills. "The Multigrade Classroom" is a seven-book series that provides an overview of current research on multigrade instruction, identifies key issues teachers face in a multigrade setting, and provides a set of resource guides for multigrade teachers. Book 5 emphasizes that instructional quality and student grouping are key components for success in the multigrade classroom. Sections cover commonly used teaching methods (lecture-recitation and discussion); the Practice Model of Instruction--a direct-instruction method--and related elements of the learning environment; aspects of effective lesson planning and instruction; independent study and individualized instruction; using computers and the Internet in the elementary classroom; grouping as an instructional strategy (mixed-ability groups, planning whole-class instruction, grouping strategies based on ability, and research on ability grouping); case examples of grouping in two schools with multigraded classes; characteristics of a collaborative classroom and teacher and student roles in such classrooms; challenges in moving from traditional to collaborative instruction (discipline, time needs, individual differences among students, values conflicts); the research base for collaborative learning; and guidelines for planning groupwork. (Contains 48 references and 15 resources.) (SV)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 448 982

K 1 2 3 4 5 6 7 8

The Multigrade Classroom
A Resource for Small, Rural Schools

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Jerry D. Kirkpatrick
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Book 5: Instructional Delivery and Grouping

RC 022773

Northwest Regional Educational Laboratory

BEST COPY AVAILABLE

THE MULTIGRADE CLASSROOM: A RESOURCE HANDBOOK FOR SMALL, RURAL SCHOOLS

Book 5: Instructional Delivery and Grouping

November 1999

Rural Education Program

Based on the September 1989 publication
of the same title written by Bruce A. Miller

Susan Vincent, Editor

Joyce Ley, Director

Northwest Regional Educational Laboratory
101 S.W. Main Street, Suite 500
Portland, Oregon 97204

Acknowledgments

The following selections have been reprinted with permission:

Cohen, E. (1986). *Designing groupwork: Strategies for the heterogeneous classroom* (pp. 207–209). New York, NY: Teachers College Press. (Reprinted with permission of publisher.)

Emmer, E.T. (1987). Classroom management and discipline. In V. Richardson-Koehler & D.C. Berliner (Eds.), *Educators' handbook: A research perspective* (pp. 233-258). White Plains, NY: Longman. (Reprinted with permission of publisher.)

Evertson, C.M., Emmer, E.T., Clements, B.S., Sanford, J.P., & Williams, E. (1981). *Organizing and managing the elementary school classroom*. Austin, TX: University of Texas, Research and Development Center for Teacher Education. (Reprinted with permission of Carolyn Evertson, Peabody College, Vanderbilt University, Nashville, TN.)

Gaustad, J. (1994). Nongraded education: Overcoming obstacles to implementing the multigrade classroom [Special issue]. *OSSC Bulletin, 38*(3 & 4). (Reprinted with permission of author.)

Gibbons, M., & Phillips, G. (1978). Helping students through the self-education crisis. *Phi Delta Kappan, 60*(4), 296–300. (Reprinted with permission of publisher.)

Kagan, S. (1989). *Cooperative learning: Resources for teachers*. San Juan Capistrano, CA: Resources for Teachers. (Reprinted with permission of publisher.)

Karweit, N. (1987). Diversity, equity, and classroom processes. In M.T. Hallinan (Ed.), *Social organization of schools: New conceptualizations of the learning process* (pp. 71–102). New York, NY: Plenum Press. (Reprinted with permission of publisher.)

Kentucky Department of Education. (1996). *Nearly all Kentucky schools show improvement in latest KIRIS scores, but middle schools lag behind* [Press release]. Frankfort, KY: Author. (Reprinted with permission of author.)

Murphy, J., Weil, M., & McGreal, T. (1986). The basic practice model of instruction. *Elementary School Journal, 87*(1), 83–96. (Reprinted with permission of the University of Chicago Press.)

Oregon Department of Education, & Ackerman Laboratory School. (1994). *Mixed-age programs, 1993–94*. Salem, OR: Oregon Department of Education. (Reprinted with permission of publisher.)

Pavan, B.N. (1992). The benefits of nongraded schools. *Educational Leadership, 50*(2), 22–25. (Reprinted with permission of author.)

Slavin, R.E. (1987). Ability grouping and student achievement in elementary schools: A best-evidence synthesis. *Review of Educational Research, 57*(3), 293–336. (Reprinted with permission of the American Educational Research Association.)

Slavin, R.E. (1988). Synthesis of research on grouping in elementary and secondary schools. *Educational Leadership, 46*(1), 67–77. (Reprinted with permission of the Association for Supervision and Curriculum Development.)

Slavin, R.E., & Madden, N.A. (1989). What works for students at risk: A research synthesis. *Educational Leadership, 46*(5), 4–13. (Reprinted with permission of the Association for Supervision and Curriculum Development.)

Thomas, J.W., Strage, A., & Curley, R. (1988). Improving students' self-directed learning: Issues and guidelines. *Elementary School Journal, 88*(3), 313–326. (Reprinted with permission of the University of Chicago.)

Overview

Preface

The preface describes the process used in developing this handbook, including the multigrade teachers who shared their classroom strategies and ideas for improving the usefulness of the handbook.

Introduction

The history of multigrade classroom instruction is presented, along with the background information that describes why multigrade instruction is an important and complex issue for educators.

Book 1: Review of the Research on Multigrade Instruction

In this book, the research on multigrade instruction is reviewed in order to answer two questions: (1) What effect does multigrade instruction have on student performance? and (2) What kind of training is needed in order to teach in a multigrade classroom? Detailed information focusing on organizing and teaching in a multigrade classroom is also presented.

Book 2: Classroom Organization

This book describes strategies for arranging and organizing instructional resources and the physical environment of the classroom. Sample classroom layouts and a "design kit" for organizing your classroom are also included.

Book 3: Classroom Management and Discipline

Establishing clear expectations for student behavior and predictable classroom routines has been shown to improve student performance. In this book, research relating to classroom management and discipline are presented, along with a checklist for planning management routines and discipline procedures.

Book 4: Instructional Organization, Curriculum, and Evaluation

Research-based guidelines for planning, developing, and implementing instructional strategies are presented. This book emphasizes the development of cooperative work norms in the multigrade classroom and explains how to match instruction to the needs of students. An overview of curriculum and evaluation planning concepts is also provided. This book is a close companion piece with book 5: Instructional Delivery and Grouping.

Book 5: Instructional Delivery and Grouping

This book emphasizes that instructional quality and student grouping are key components for success in the multigrade classroom. Instructional methods such as recitation, discussion, and cooperative learning are reviewed. Planning guides and examples are also included where appropriate. Strategies for organizing group learning activities across and within grade levels, especially those that develop interdependence and cooperation among students, are discussed.

Book 6: Self-Directed Learning

Developing skills and strategies in students that allow for a high level of independence and efficiency in learning, either individually or in combination with other students, is essential in the multigrade classroom. Ideas for developing self-direction are presented in this book.

Book 7: Planning and Using Peer Tutoring

This book provides guidelines for developing skills and routines whereby students serve as "teachers" to other students within and across differing grade levels. The research on what makes for effective tutoring in the classroom is also reviewed.

Preface

The development of this handbook began in 1987, when a group of people involved in rural education raised several issues regarding multigrade classroom instruction.

In their discussions, members of the advisory committee for the Northwest Regional Educational Laboratory's (NWREL) Rural Education Program agreed that multigrade teacher training in their respective states was either lacking or wholly inadequate. They also were concerned about the availability of research and training materials to help rural multigrade teachers improve their skills.

As a result of these concerns, the Rural Education Program decided to develop a handbook to assist the multigrade teacher. The handbook evolved in several stages. The first was a comprehensive review, conducted by Dr. Bruce Miller, of the research on multigrade instruction that included articles, books, and research reports from the United States, Canada, Australia, and other countries.

From this review, six topic areas emerged that are considered essential for effective multigrade instruction: classroom organization; classroom management and discipline; instructional organization, curriculum, and evaluation; instructional delivery and grouping; self-directed learning; and planning and using peer tutoring. Dr. Miller developed the handbook around these six instructional areas, and a draft was completed in June 1989, with support from the Office of Educational Research and Improvement (OERI).

The second stage occurred in July 1989, when a conference was held in Ashland, Oregon, with multigrade teachers who were recommended by educational leaders from throughout the Northwest and Pacific Island regions.

During the conference, participants were organized into workgroups, each focusing on one of the topic areas. Their tasks were to review the appropriate handbook chapter for clarity and content, to suggest alternative and/or additional instructional strategies to those presented in the handbook, and to write case descriptions of activities drawn from their classrooms. For example, Joel Anderson from Onion Creek Elementary in Colville, Washington, described how he grouped students for cooperative learning. Darci Shane from Vida, Montana, presented a school handbook she had developed for parents that included a class schedule and other school-related information. (A full list of participants appears at the end of this preface.) The final handbook was completed by Dr. Miller in September 1989.

Based on the growing interest and research on multigrade instruction the handbook was revised and updated in 1999, also with support from OERI. The final version, completed with support from the Institute of International Education (IIE), is now composed of a series of seven stand-alone books.

Book 1: Review of the Research on Multigrade Instruction
Book 2: Classroom Organization
Book 3: Classroom Management and Discipline
Book 4: Instructional Organization, Curriculum, and Evaluation
Book 5: Instructional Delivery and Grouping
Book 6: Self-Directed Learning
Book 7: Planning and Using Peer Tutoring

Purpose and Scope of the Handbook

The handbook has been written to serve three general purposes:

- To provide an overview of current research on multigrade instruction
- To identify key issues teachers face when teaching in a multigrade setting
- To provide a set of resource guides to assist novice and experienced multigrade teachers in improving the quality of instruction

However, because of the complexity of multigrade instruction and the vast amount of research on effective classroom instruction, this handbook can only serve as a starting point for those educators wanting to learn new skills or refine those they already possess.

Each book of the series presents information, strategies, and resources considered important for the multigrade teacher. While all the books are related, they also can stand alone as separate documents. For example, the books on Classroom Organization (Book 2) and Classroom Management and Discipline (Book 3) contain overlapping information. Ideally, these two books are best utilized together. The same is true of the books on Instructional Organization, Curriculum, and Evaluation (Book 4) and Instructional Delivery and Grouping (Book 5). Wherever possible, these relationships have been noted in the appropriate books.

In conclusion, the series of books has been designed to be used as a research-based resource guide for the multigrade teacher. It covers the most important issues the multigrade teacher must address to be effective in meeting the needs of students. Sample schedules, classroom layouts, resource lists, and strategies aimed at improving instruction have been used throughout. It is our hope that the handbook will raise questions, provide answers, and direct the multigrade teacher to resources where answers to other questions can be found.

Participants in the Multigrade Conference

Kalistus Ngirturong
Aimeliik Elementary
Babeldaob Island
Republic of Palau

Robin Lovec
Springdale School
Springdale, Montana

Anthony Moorow
Yap Department of Education
Colonia, Yap

Cheryl Mikolajcvyk
Kaumakakai, Hawaii

Leslie Gordon
Pitkas Point School
St. Mary's, Alaska

James Makphie
Majuro, Marshall Islands

Edith Nicholas
Andrew K. Demoski School
Nulato, Alaska

Benjamin Bernard
Majuro, Marshall Islands

Linda Pelroy
W.W. Jones Elementary
Arock, Oregon

John Rusyniak
Mentasta Lake School
Mentasta Lake, Alaska

Patricia Reck
Brothers School
Brothers, Oregon

Bill Radtke
English Bay School
English Bay, Alaska

Phil M. Gillies
Stone Elementary
Malad, Idaho

Carol Spackman
Park Valley School
Park Valley, Utah

Barbara Robinson
Arbon Elementary School
Arbon, Idaho

Monte Phoenix and Karrie Phoenix
Orovada, Nevada

Joel Anderson
Onion Creek Elementary
Colville, Washington

Marty Karlin
Trinity Center School
Trinity Center, California

Troy Smith
Dixie Elementary School
Dixie, Washington

Jill Bills
Sanders Elementary School
Sanders, Arizona

Darci Shane
Southview School
Vida, Montana

Eileene Armstrong
Melrose Elementary
Melrose, Montana

Pam Cunningham
Sand Springs Elementary
Sand Springs, Montana

Jennifer McAllister
Deerfield Elementary
Lewistown, Montana

Kimberly Rindal
Ayers Elementary
Grass Range, Montana

Sammy Vickers
Grant Elementary
Dillon, Montana

Brian Wolter
Avon Elementary
Avon, Montana

Introduction

In contrast to a historical pattern of children developing within an age-varied social system, many children today spend a majority of their time in an age-segregated milieu (Katz, Evangelou, & Hartman, 1990; McClellan, 1994). The results of this pattern of segregation are thought to contribute to a declining social support system and compromised development of children's social and academic skills.

Coleman (1987) suggests the need for a significant institutional and societal response to support functions traditionally filled by the family, such as the development of feelings of belonging and community, emotional and social bonding, and nurturance. Increasingly, the school has been viewed as one of the most effective and efficient contexts to address children's academic, affective, and social needs before these needs reach crisis proportions.

A growing body of research explores the influence of educational contexts on children's development. While interest has focused on the impact of the classroom environment on children's attitudes toward school, cognitive growth, and academic development, less direct attention has been given to the relationship between classroom context (including the structure and content of children's peer relationships) and academic and social development during the elementary years. One approach explored by theoreticians and researchers for encouraging children's academic and social skill development is multigrade instruction.

In multigrade instruction, children of at least a two-year grade span and diverse ability levels are grouped in a single classroom and are encouraged to share experiences involving intellectual, academic, and social skills (Goodlad & Anderson, 1987; Katz et al., 1990; McClellan & Kinsey, 1996). Consistency over time in relationships among teachers, children, and parents is viewed as one of the most significant strengths of the multigrade approach because it encourages greater depth in children's social, academic, and intellectual development. The concept of the classroom as a "family" is encouraged, leading to expansion of the roles of nurturing and commitment on the part of both students and teacher (Feng, 1994; Hallion, 1994; Marshak, 1994).

The potential academic and social implications of the multigrade concept of education are strongly supported by extensive research demonstrating the importance of peers in children's academic and social development, and by studies of reciprocity theory, which demonstrate the positive effect on child academic and social behavior of sustained close relationships between children and caregivers (Kinsey, 1998; Maccoby, 1992).

The adequate implementation of a multigrade approach to education extends beyond simply mixing children of different grades together. A positive working model of a multigrade classroom allows for the development of academic and social skills as the teacher encourages cross-age interactions through tutoring and shared discovery. Social competence develops

for older children out of their roles as teachers and nurturers, and for younger children out of their opportunity to observe and model the behavior of their older classmates (Katz et al., 1990; Ridgway & Lawton, 1969).

The multigrade classroom has traditionally been an important and necessary organizational pattern of education in the United States, notes Miller (1993). Multigrade education dates back to the one-room schools that were the norm in this country until they were phased out in the early part of the 1900s (Cohen, 1989; Miller, 1993). From the mid-1960s through mid-1970s, a number of schools implemented open education, ungraded classrooms, and multigrade groupings. Although some schools continued to refine and develop the multigrade concept, many of these programs disappeared from public schools. With the beginning of the industrial revolution and large-scale urban growth, the ideal of mass public education took root and the practice of graded schools began in earnest.

The graded school system provided a means of organizing and classifying the increased number of urban students of the 1900s. Educators found it easier to manage students by organizing them into age divisions or grades. Other factors, such as the advent of the graded textbook, state-supported education, and the demand for trained teachers, further solidified graded school organization (Miller, 1993; Uphoff & Evans, 1993). Critics of the graded school were quick to emphasize this deficiency. The realization that children's uneven developmental patterns and differing rates of progress are ill-matched to the rigid grade-level system has resulted in a growing interest in and study of the potential benefits of multigrade education in recent years (Miller, 1996). This growing interest is due to a greater focus on the importance of the early years in efforts to restructure the educational system (Anderson, 1993; Cohen, 1989; Stone, S.J., 1995; Willis, 1991) and an awareness of the limitations of graded education.

The multigrade classroom is labor intensive and requires more planning, collaboration, and professional development than the conventional graded classroom (Cushman, 1993; Gaustad, 1992; Miller, 1996). Sufficient planning time must be available to meet the needs of both teacher and students. Insufficient planning, staff development, materials, support, and assessment procedures will have an impact on the success of the multigrade program (Fox, 1997; Miller, 1996; Nye, 1993).

Despite these constraints, there are special advantages to multigrade classrooms. Flexible schedules can be implemented and unique programs developed to meet students' individual and group interests and needs. Combined classrooms also offer ample opportunity for students to become resourceful and independent learners. The multigrade rural classroom is usually less formal than the single-grade urban or suburban classroom. Because of the small class size, friendly relationships based on understanding and respect develop naturally between the students and the teacher. In

this setting, students become well-known by their teacher and a family atmosphere often develops.

However, many teachers, administrators, and parents continue to wonder whether multigrade organization has negative effects on student performance. For most rural educators, multigrade instruction is not an experiment or a new educational trend, but a forceful reality based on economic and geographic necessity. In a society where educational environments are dominated by graded organization, the decision to combine grades is often quite difficult. The Rural Education Program of the Northwest Regional Educational Laboratory receives numerous requests from rural educators with two overriding concerns regarding multigrade classrooms:

- What effect does multigrade instruction have on student performance?
- What kind of preparation or training is needed to be an effective teacher in a multigrade classroom?

This handbook will provide answers to these questions and develop an overview of key issues facing school districts and teachers involved in or contemplating multigrade classrooms.

Contents

Instructional Delivery and Grouping 1

Methods Teachers Commonly Use 2

Recitation 4

Discussion 7

Practice Model of Instruction 10

The Learning Environment 10

Teacher authority 10

Task orientation 10

Positive expectation 10

Student cooperation and accountability 11

Nonnegative affect 11

Established structure 11

The Learning Activities 12

Establishing a Framework for the Lesson 12

Teacher-Student Interactions 12

Monitoring 14

Independent Study and Individualized Instruction 16

Using Computers as an Instructional Tool 19

Common Uses of the Computer in Education 20

Using the Internet in the Primary Classroom: Research Projects 20

Publications 21

Collaborative Projects 23

Communication 24

Grouping as an Instructional Strategy 26

Working With Whole-Class, Mixed-Ability Groups 26

Planning for Whole-Class Instruction 27

Instructions 28

Ability grouping 30

Ability grouping within classes 31

Ability grouping—streaming classes 32

An Analysis of the Research on Ability Grouping: Historical and Contemporary Perspectives 33

Guidelines 34

Implications for the Multigrade Classroom 35

Learning Centers 35

Management of Learning Centers 35
Putting It All Together 37
Case Example 1: History and Philosophy on Grouping at Onion Creek School 38
Case Example 2: Instructional Grouping at Arbon Elementary School 43
Collaborative Learning 45
Characteristics of a Collaborative Classroom 45
Shared knowledge among teachers and students 45
Shared authority among teachers and students 46
Teachers as mediators 46
Heterogeneous groupings of students 46
Teacher Roles in a Collaborative Classroom 47
Facilitator 47
Model 48
Coach 49
Student Roles in a Collaborative Classroom 50
Goal setting 50
Designing learning tasks and monitoring 50
Assessment 51
Challenges and Conflicts 52
Classroom control 52
Preparation time for collaborative learning 52
Individual differences among students 52
Individual responsibility for learning 53
Conflict of values 53
What is the Research Base for Collaborative Learning? Vygotskian Theory 54
Inner speech 54
Scaffolding and development 55
Connecting school learning to everyday life 55
Planning Groupwork 57
Conclusion 59
References 61
Resources 65

Instructional Delivery and Grouping

Every method a teacher uses has advantages and disadvantages, and requires some preliminary preparation. So, what else is new? Three broad categories of instructional methods are teacher talk, student talk, and student-teacher interactive talk. Often, a particular method will naturally flow into another within the same lesson. Which instructional method is "right" for a particular lesson depends on many things, and among them are the age and developmental levels of the students; what the students already know; what they need to know to succeed with the lesson; the subject-matter content; the objective of the lesson; the available people, time, space, and material resources; and the physical setting. Another, more difficult problem, is to select an instructional method that best fits one's particular teaching style and the lesson situation. There is no one right method for teaching a particular lesson, but there are some criteria that pertain to each that can help a teacher make the best decision possible.

In this book, the most commonly used methods will be briefly described, along with research-based evidence indicating their potential impact on students. In addition, methods found to be most beneficial for multigrade instruction will be discussed in greater detail, indicating how they might be used and where further information may be obtained.

Because cooperation and peer support play such a key role in multigrade instruction, a major emphasis will be placed on groupwork: how to form groups, how to structure learning experiences, and what skills are needed for successful cooperation. It is important to keep in mind that instructional delivery and classroom environments are extremely complex. Information presented here provides only a sampling of possibilities. References and resources are included at the end of the book for those seeking more detailed information.

Methods Teachers Commonly Use

From our early experiences as students, we generally remember a classroom characterized by the teacher in front of the room or in front of our reading group, "teaching." After the lesson, we often completed worksheets at our individual desks while the teacher worked at her desk. A test was often given sometime later to determine what we learned. If asked what our favorite subject was, we jokingly would say, "recess."

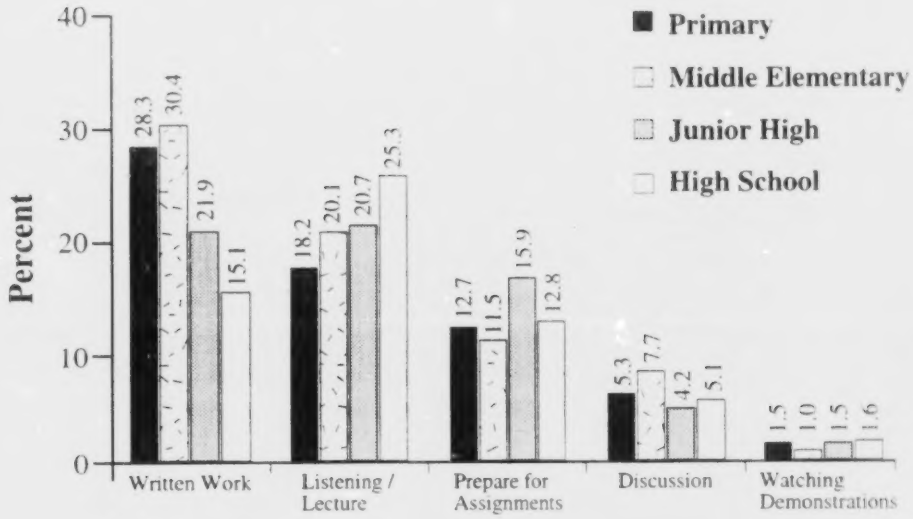
Not much has changed for a great majority of students. Based on current research, this pattern of instruction is alive and well in a majority of classrooms in the United States, despite evidence that there may be more effective methods of learning and ones that better meet our schools' goals for democratic citizenship. One of the most extensive studies of schooling practices ever undertaken was presented by John Goodlad (1984) in *A Place Called School*. In his discussion of the data taken from student and teacher interviews and observations of more than 1,000 classrooms, Goodlad's research presents a rather bland picture of student learning experiences:

> *Four elements of classroom life in the schools of our sample come through loud and clear from our data. First, the vehicle for teaching learning is the total group. Second, the teacher is the strategic, pivotal figure in this group. Third, the norms governing the group derive primarily from what is required to maintain the teacher's strategic role. Fourth, the emotional tone is neither harsh and punitive nor warm and joyful; it might be described most accurately as flat.*
>
> *No matter how we approach the classroom in an effort to describe and understand what goes on, the teacher comes through as coach, quarterback, referee, and even rule-maker. But there the analogy must stop because there is no team. There is little or nothing about classroom life as it is conducted, so far as I am able to determine, that suggests the existence of or need for norms of group cohesion and cooperation for achievement of a shared purpose (p. 108).*

Not surprisingly, the most dominant form of instruction was a lecture-recitation format, where the teacher presented the information to be learned, asked questions to check understanding, and then gave seatwork. The frequency of these activities increased progressively from the primary grades through high school. Goodlad found little evidence of instructional methods that used active modes of instruction (discussion, demonstrations, small-group projects, etc.).

Figure 1 presents a summary of five instructional practice areas in primary through high school classes drawn from Goodlad's research.

FIGURE 1. Snapshot Observations of Instructional Practices From *A Place Called School*



More than 60 percent of student time is involved in passive activities where students either listen to the teacher or do seatwork assignments. The remaining percentage of instruction (not shown on the graph) reflects more active forms of learning, such as practice in verbal performance (average for all levels = 4.6 percent), nontextbook reading (average for all levels = 4 percent), and simulation/role play (average for all levels = 2 percent). No data were obtained indicating that students worked cooperatively on group projects, tutored, or were involved in inquiry forms of instruction.

Goodlad's research demonstrates that the most common form of instruction employs a lecture-recitation format, where students tend to be passive participants for a large part of the learning process. Many reasons account for this reliance on lecture-recitation: It is the way most of us were taught as children; It is the predominant instructional method in schools; It is the primary form of instruction in teacher preparation classes; And it provides for greater teacher control.

If we want to develop cooperative, self-directed learners, then other instructional methods must be used as well. In addition, recent research on effective teaching sheds new light on the use of recitation. Teachers whose students show significant growth in achievement have strengthened the recitation method so that it is a powerful tool for teaching basic skills. This method has been called by numerous names: direct instruction, explicit instruction, and the practice model of instruction. Even with these improvements, teachers must use a variety of methods if student attention and motivation are to be maintained (Good & Brophy, 1987). It also must be recognized that some types of learning concept development—how to work in small groups, developing self-direction, or building skills as a writer—require different instructional methods.

Recitation

Recitation gained its name from the early 19th-century practice of a single student reciting a lesson to the teacher. With the rise of graded classroom instruction, the term has come to mean a "whole-class format characterized by question-answer drills over content" (Doyle, 1986, p. 403).

Lecture-recitation has three distinct parts:

1. Explanatory presentations of organized information (often by teacher presentation or independent study)
2. Monitoring student "learning" through questions requiring a single, correct-answer response
3. Publicly evaluating student responses for correctness

There are many variations of these three steps. They may be used in small or large groups, or they may be used with individuals. Generally, research indicates that recitation is most commonly used with large, whole-class groups. A typical recitation involves a teacher questioning students in a fast-paced manner. Students publicly answer, and their responses are evaluated for correctness. Recitation tends to work best with factual or convergent type information and with students of the same ability level. A typical scenario is described below:

Teacher: We have just presented information on using adjectives to sharpen your writing skills. Let's review to see how much you learned. What job does an adjective play in a sentence?

Student: It serves to describe a noun.

Teacher: Excellent. Who can give me an example?

Student: Old.

Teacher: That's correct.

Student: Run!

Teacher: No, that's an action word.

Notice that the teacher has just completed a presentation on adjectives and begun to question students to check their understanding. When a student gave a wrong answer, the teacher said it was incorrect.

Recitation can be used to gain feedback on student knowledge. However, when used with groups, public evaluation of student responses and the equitable distribution of questions can be problematic for many students, especially low achievers. During recitation, students quickly learn

who the "smart" students are by who gets asked questions and who has the correct answers. The long-term effect on many students is to dampen their desire to answer questions. Students learn it is better to be quiet and let the "smart" students do the talking. This method of teaching can stifle a teacher's creativity. It requires well-organized content preparation and good oral communication skills, which, depending on the age level of students, may vary. Steps must be followed in a prescribed order, hindering the possibilities of exploration. This method encourages memorization of facts and does not encourage or allow for the development of higher-order thinking skills.

If a teacher uses recitation, what can be done to reduce or eliminate the negative effects? In his book on questioning, Dillon (1988) provides some strategies and guidelines for increasing student involvement and reducing the negative impact of public evaluation. Dillon suggests that students also prepare convergent questions to be used during recitation. Instead of the teacher using the students' questions, students pair up and ask each other the questions. Table 1 provides an overview of the key elements in planning and carrying out recitation.

TABLE 1. Planning Guide for Recitation

Teacher Asking Questions

Prepare the questions to ask:

1. Write them down
2. Arrange them in a purposeful order
3. Try them out on friends, then revise

Ask questions slowly:

1. Stop and think before asking
2. Ask and wait patiently for a response

Listen intently to the answers:

1. Show interest in the student response
2. Listen to all of the response
3. Listen to right and wrong answers, from slow and fast students

Student Asking Questions

Preparation:
Have each student prepare five written questions and answers, while you prepare 10 questions

Exchange:
Help students orally exchange their questions and answers, while you listen and comment

1. Student A asks a question
2. Student B gives an answer
3. Student A evaluates the answer
4. Student B asks the next question

Quiz:
Contribute a few of your questions to be answered orally or in writing

Evaluation:
Evaluate the question-answers, correcting the questions and teaching students to use questions for learning

(adapted from *Dillon, 1988*, p. 98)

Other strategies have been effectively used to counteract these negative effects (Good & Brophy, 1987; Kagan, 1990):

- Extend wait time after a question to three to five seconds
- Keep a tally of who has been called on to ensure that all students get an equal opportunity to respond
- Use cooperative learning structures that allow students to confer with one another before answering
- Have students write answers down and hold them up when responding

Dillon (1988) suggests that careful planning, patience, and a show of interest (listening) are central to effectiveness. He also suggests that recitation is based on an explicit set of behaviors that should be followed consistently. In other words, don't use tricky questions when students expect right-or-wrong–type questions.

In terms of evaluation, be clear if the response is correct or incorrect, and then praise and elaborate. Corrective feedback has been shown to improve student achievement (Barell, 1995; Good & Brophy, 1987).

For the multigrade teacher, recitation must be used judiciously. It is not a method that lends itself to whole-class instruction, where multiple performance levels have been combined. Recitation is most effective when used for basic skills instruction, where all students are learning the same skill and are at the same performance level.

Discussion

Both discussion and recitation use questions, but discussion is quite different in its purpose and the types of questions used. As you may remember, recitation uses convergent questions (only one right answer). Discussion, on the other hand, uses a few well-thought-out, divergent questions aimed at perplexing students, in order to stimulate thought and conversation. Whereas recitation asks many questions with single answers, discussion asks fewer questions that generally have more than one right answer.

The role of the teacher is quite different in discussion as well. The teacher does not talk at every turn of the questioning, but yields the floor to students who speak at considerable length, respond to observations made by their peers, and bring in outside information to illustrate their points of view. Consider the following scenario:

Teacher: If you found $10 on the way to school, what do you think you would do with it?

Student 1: I would keep it. If it was just blowing along the ground, there would be no way to know whose money it was.

Student 2: I am not sure. I would like to keep it, but then maybe the person who lost it really needed it. I am not sure how to find the person who lost it.

Teacher: That is an interesting point. How would you find the person who lost the money?

As the example illustrates, discussion begins with a perplexing question that engages student interest and thought. As students express their viewpoints, a diverse set of responses begins to emerge that often raises additional questions. The teacher's role is to keep discussion moving by raising probing, but related, questions.

Table 2 provides an overview of the key elements in planning for a discussion. Since discussion involves divergent questions, where no single answer is correct, students from many different levels of achievement can participate. However, students need to be trained in how to listen and support their peers during discussion.

TABLE 2. Planning Guide for Discussion

Prepare the question for discussion:

- Develop a question based on your intended purpose and write it down.
- Decide how you will present it to students: orally, on the blackboard, or as a handout.

Be sure your question perplexes students:

Review the question with students until they understand it the way you do. Use non-questioning techniques to facilitate discussion. There are four general approaches that can be used after a student has just finished speaking:

- *Statements* If you have questions you would like to ask in order to facilitate discussion, rethink them as statements. For example, instead of saying, Do you believe all people feel that way? you might say, I know several people who have different feelings about that. You can also use a restatement of what you think a student may be saying. The point here is to avoid falling into a central teacher questioning role and to keep the discussion going among the students.

- *Student Questions* Provide for a student or the class a question regarding what a speaker has contributed. For example, a student has just said that people who make lots of money are insensitive to the poor. Other students could be encouraged to ask: Can you tell us why you believe that?

- *Signal* Signal your reception of what the student is saying without taking or holding the floor yourself. You might use phrases such as, That is interesting, Oh, I had not thought of that before, or Wow. Amazing, and so forth.

- *Silences* Say nothing at all but maintain a deliberate, appreciative silence for three seconds or so, until the original speaker resumes or another student enters. If the silence is too long, act quickly.

In summary, discussion, unlike recitation, begins with a teacher question aimed at perplexing students and thereby engaging them in student-to-student dialogue. The teacher's role is not to control and direct student responses toward single "correct" answers, but to facilitate student exploration of the topic. Discussion may be used with a wide range of student levels and is an excellent method for stimulating ideas for writing. Because it works well with multiple achievement levels, it is ideal for total class instruction in the multigrade classroom.

Practice Model of Instruction

The Basic Practice Model of Instruction (Murphy, Weil, & McGreal, 1986) exemplifies a direct-instruction method that embodies the research on effective teaching in a meaningful framework for teachers. The research supporting this model has been collected from real-life classes where students have shown significantly high academic achievement. In developing the model, two areas of learning were focused on: the learning environment and the learning activities. The crucial variables relating to each of these areas will be presented on the following pages along with the research supporting their effectiveness (as cited in Murphy, et al.). This model is most beneficial to the multigrade teacher for use in basic skills instruction. However, elements of the model have wide implications for effective teaching with most subjects.

The Learning Environment

Research has identified six essential variables affecting the learning environment that are under teacher control and related to student achievement in basic academic subjects. Each variable will be presented along with its identifying characteristics and the associated teaching behaviors.

Teacher authority

Strong teacher direction and control are associated with student achievement in basic skill subjects. This occurs because the teacher maintains greater student involvement and more on-task student behavior through the following activities:

- Controlling and maintaining a dominant role in discussion
- Assigning children to seats and learning groups and arranging the learning environment so children do not have to get up to secure materials
- Organizing instruction around teacher questions and using questions that require specific answers in a recitation format

Task orientation

The learning environment is characterized by a primary emphasis on the assignment and completion of academic tasks. Students are more engaged and learn more when teachers maintain a strong academic orientation rather than a strong emotional/self-esteem focus. Students who have success on academic tasks generally have better self-concepts than those who do poorly.

Positive expectation

The teacher shows a positive concern for each student by demanding academic excellence and mature behavior conducive to academic progress. Teachers expect more work and quality work because they believe that all students can learn.

Student cooperation and accountability

Teachers who expect students to work together and cooperate on academic tasks produce higher student performance than teachers who do not emphasize cooperation. Effective teachers:

- Expect students to cooperate in completing academic tasks
- Hold students accountable for their work
- Use well-thought-out reward systems for reinforcing cooperation

Nonnegative affect

Teachers should emphasize academics through positive reinforcement and avoid such negative behaviors and attitudes as criticism of student behavior, yelling or screaming at students, using sarcasm with students, scolding students for inappropriate behavior, and ridiculing students to facilitate learning.

Established structure

Teachers who establish a clear learning structure, including norms for student behavior and predictable patterns of activity, produce greater student learning than those teachers who do not establish a well-defined structure. The establishment of structure involves:

- Developing clear class rules and procedures that are taught and monitored
- Establishing clear class routines and ensuring that all students understand them

The Learning Activities

The sequencing of activities in a lesson and the types of activities the teacher chooses to emphasize have a direct relationship to student academic achievement in basic skills. The following three topic areas have been associated with effective planning and instruction.

Establishing a Framework for the Lesson

Before the lesson begins, the teacher establishes a framework for instruction that helps students understand how information will be presented. Effective teaching research has identified six key teacher behaviors:

- Organizing learning materials in advance
- Providing clear, explicit direction about the work to be done
- Telling students about the materials they will use and the activities in which they will be involved
- Conducting pretests, revealing, discussing the objective of the lesson
- Providing an overview of the lesson
- Relating new materials to what students have already learned

Teacher-Student Interactions

This part of the lesson is often referred to as the direct instruction component, where the teacher presents materials to the students and solicits their reactions. There are two distinct phases in this part of the lesson.

In Phase 1, the teacher:

- Presents the skill or concept in the form of a model that demonstrates how the parts of a skill are connected and works through several examples.

In Phase 2, the teacher:

- Conducts recitation to check for student understanding. During this phase of instruction, research has demonstrated the effectiveness of specific teacher questioning behaviors.

  —Teachers dominate the questioning process by asking questions rather than answering them

— Teachers remain active by constantly rephrasing or asking new questions

— Questions are phrased in terms of the academic objective of the lesson

— Questions are phrased in order to ensure a high level of student success

— Teachers use factual questions with single answers when teaching basic skills

Research has also demonstrated the effectiveness of certain types of teacher response:

- Teacher responds to incorrect or unclear answers by probing in order to have students clarify or improve their answers
- Teacher provides additional information or reteaching for incorrect or unclear responses
- Teacher avoids criticism
- Teacher gives specific and personalized praise
- Teacher gives mostly academic-related praise
- Praise is dependent on the quality and nature of the student response

Finally, three teaching behaviors have demonstrated their effectiveness in structuring student attention toward key lesson elements:

- Teacher alerts students to the key parts or skills of the lesson
- Teacher sums up subparts of the lesson and the entire lesson at the end of instruction
- Teacher informs students of transitions during the lesson

Both the teacher presentation and recitation phases of the lesson have been strongly associated with student on-task behavior, higher cognitive response abilities, and more favorable attitudes toward the subject.

Monitoring

Monitoring refers to that part of instruction that occurs after the direct instruction. During this phase, the teacher supervises student practice to determine skill comprehension and provide additional assistance. Monitoring has been shown to improve student on-task behavior and increase achievement. Monitoring helps to hold students accountable for learning. During monitoring, the teacher should:

- Prepare students for seatwork by making sure they can perform the work
- Maintain a dominant position, deciding who receives feedback and help
- Provide feedback on specific subskills of the lesson in small, manageable portions that last a few seconds rather than long periods

When this effective teaching research is put together into the Practice Model of Instruction, it provides a clear and sequential set of steps for teaching basic academic skills to students. Table 3 provides an overview of the four phases of the model and their related steps.

The Practice Model of Instruction reflects the accumulation of effective teaching research. It is important to keep in mind, however, that this body of research reflects a primary focus on the teaching of basic skills in reading and math. From another perspective, this research reflects what the most effective teachers have done using a teacher-directed recitation method of instruction. Clearly, this model is not applicable to all types of learning and should be used with this caution in mind. (For a detailed, online guide for using different models of instruction, see www.proteacher.com/html).

TABLE 3. The Basic Practice Model of Instruction

Phase	Steps
1. Orientation	• Teacher establishes goals, procedures, and content of lesson
2. Development	• Teacher explains concept or skill • Teacher provides model/demonstration • Teacher checks for understanding
3. Structured Practice	• Teacher leads group through practice examples • Students respond with answers • Teacher provides corrective feedback
4. Guided Practice	• Students practice new concept or skill as seatwork • Teacher monitors student seatwork • Students practice new skill concept as homework

(Murphy, Weil, & McGreal, 1986, p. 91)

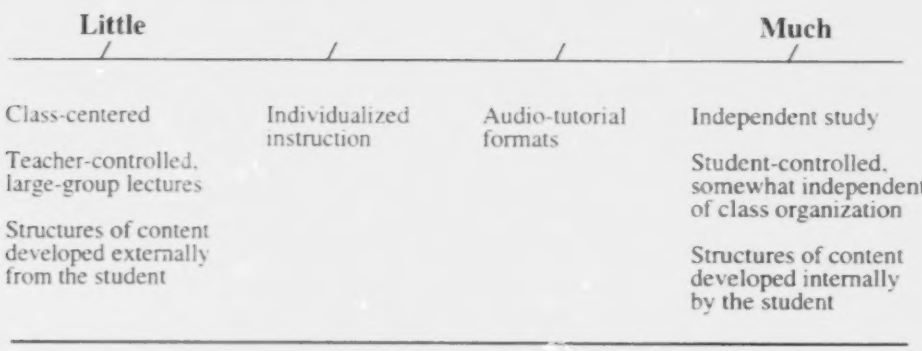
The research-based components are especially strong features of the Practice Model. In addition to their use with this model, many of them can be applied across a wide range of instructional methods in the multigrade classroom.

For example, in whatever method you use, it is beneficial to be explicit with students regarding academic and behavior expectations. It also makes sound educational sense to monitor learning in order to adjust instruction and to indicate to students that learning is important.

Independent Study and Individualized Instruction

Independent study and individualized instruction are terms that have often been used to mean the same thing: students working independently from one another and from the teacher in order to achieve individual learning goals. However, there are differences between independent study and individualized instruction that can be illustrated on a continuum (Figure 2) in terms of student control and responsibility over the learning process (Klein, 1982).

FIGURE 2. Degree of Student Responsibility and Decisionmaking About Learning



(Klein, 1982, p. 836)

Generally, independent study is associated with high school and college-level education where students work with an advisor in setting up a program of study that is independent of classroom or course organization.

More recently, independent study has been used at the elementary level with gifted students who are highly motivated and self-directed learners. In both situations, there is a trend toward students setting their own learning goals, choosing an approach to achieving their goal, and conducting periodic self-monitoring.

It is also important to distinguish this concept of independent study from the common elementary practice called independent seatwork, where students work independently on learning activities that are related to a teacher-directed lesson. Students may have some choice in materials or activities, but the teacher maintains primary control of learning.

Individualized instruction, like independent learning, has come to mean many different things. However, several key features distinguish it from other instructional methods. Wang and Lindval (cited in Good & Brophy, 1987, pp. 360–361) identify seven features that distinguish individualized instruction from other methods of learning:

1. Instruction is based on the assessed capabilities of each student.
2. Materials and procedures are used that permit each student to progress at a pace suited to his or her abilities and interests.
3. Periodic evaluations are used to inform the student regarding mastery of learning goals.
4. Students assume responsibility for diagnosing present needs and abilities, planning learning activities, and evaluating their progress toward mastery.
5. Alternative activities and materials are available for aiding student acquisitions of essential academic skills and content.
6. Provisions for student choice in selecting educational goals, outcomes, and activities exist.
7. Students assist one another in pursuing individual goals and demonstrate cooperation in achieving group goals.

Although few individualized programs contain all seven elements, most contain provisions for diagnosing student needs, organizing learning materials and experiences, evaluating progress, and creating alternative learning materials for students who need reteaching.

In summary, the greatest variation between individualized instruction and independent study centers on the degree of student control and responsibility, with independent study requiring the most. Clearly, teachers must begin by teaching students to handle responsibility and self-direction before assigning them to one of these strategies, and then doing so only when they are ready.

The research on these two methods of instruction is uneven and inconsistent. In part, this is due to the wide range of individualized programs implemented and variations in how educators define their methods. However, it is safe to say there have been significant gains in academic achievement when the programs have been designed and implemented using effective learning principles (Good & Brophy, 1987).

A central problem for the multigrade teacher is working with individuals or small groups while ensuring that the remainder of the students are meaningfully engaged in learning. Individualized instruction and independent study provide useful methods for solving this problem. For example,

while the teacher instructs a group of primary-level students in reading skills, students at the upper levels could be engaged in individual or group learning activities that have been developed and written down in advance.

The types of individual learning activities depend on the needs of students, available resources, and the maturity of the students. Some students might require tightly sequenced and structured learning materials, while others may be self-directed enough to establish their own learning goals, choose the learning activities, and keep track of their own progress. Learning centers, computerized learning programs, and learning kits have been used extensively to aid in individualization. However, teachers have usually used them as an extension of existing lessons rather than as a unique program of studies. Problems associated with individualized instruction tend to support this teacher practice.

Good and Brophy (1987) identify several issues or concerns surrounding the use of individualized instruction that should be considered when using this method in the multigrade classroom:

- Research on teaching has found that active, direct instruction produces higher rates of academic achievement for basic skills than other instructional methods. Individualization eliminates this active teaching element from learning.
- Higher cognitive processes such as problem solving, creativity, and thinking strategies are not easily taught without the direct involvement of the teacher.
- Students are too often left on their own to learn, leaving the materials to provide the instruction. This often leads to mastery of skills without the ability to apply them.
- The principles of individualization require that pacing, materials, and strategies be developed and tailored for each student. This is not feasible for most teachers in terms of resources of time and materials.

In summary, Good and Brophy (1987) do not recommend individualizing instruction if it means that students will spend most of their time working alone trying to learn from materials. Instead, they suggest using individualization when the teacher "attempts to accommodate individuals' needs within the group context and to achieve an appropriate balance of instructional activities (whole-class instruction, small group instruction and cooperative learning activities, individual work)" (p. 374).

This means that the multigrade teacher needs to maintain a central role in student learning, but one that encourages and enhances the development of self-direction and responsibility without abdicating responsibility for student learning.

Using Computers as an Instructional Tool

Most six-year-olds can't wait to go to school on the first day in September. However, for an alarmingly large number of these children, boredom, anxiety, and fear of learning quickly set in (Shank & Cleary, 1995). A teacher lecturing to a classroom of 30 students goes against everything researchers have discovered about the way children learn. Our schools suffer from the assumptions that learning can be disassociated from doing, that every child must conform to a standard curriculum, and that accumulating facts is as important as learning processes. Compared to the rapid technological change our society has undergone in the last century, the rate of change in our educational institutions has been at a near standstill.

Nicholas Negroponte, Mitchel Resnick, and Justine Cassell, professors from the Massachusetts Institute of Technology, argue in *Creating a Learning Revolution* (n.d.) that digital technologies can enable students to become more active and independent learners. The Internet will allow new "knowledge-building communities" in which children and adults from around the globe can collaborate and learn from each other. One of the most potentially powerful tools for facilitating instruction in the multigrade classroom is the use of microcomputers. Computers will allow students to take charge of their own learning through direct exploration, expression, and experience. This shifts the student's role from "being taught" to "learning" and the teacher's role from "expert" to "collaborator" or "guide." These ideas are an integral part of constructivism, an ideal strategy for the varied ability and age levels of a multigrade classroom.

Constructivism is both a theory of learning and a strategy for education. It builds on the "constructivist" theories of child psychologist Jean Piaget and asserts that knowledge is not simply transmitted from teacher to student, but rather is actively constructed in the mind of the learner. This theory suggests a strong connection between doing and learning. It asserts that activities such as making, building, and programming provide a rich context for learning (Kafai & Resnick, 1996).

In order to allow students to take more responsibility for their learning, they must be allowed to put concepts into a personally meaningful context. Students retain more information and have more fun learning when material is presented in this way. Computers make these meaningful contexts possible by providing students with highly individualized education.

Another important application of computer technology is simulation. Computer simulation allows students, especially in small, rural schools, to explore phenomena that would otherwise be too expensive or too impractical. Simulations are effective because they provide a guiding context for students to integrate what they learn. They learn details in the context of a larger task and are not faced with decontextualized facts that have no relevance to their lives or goals (Shank & Cleary, 1995).

Common Uses of the Computer in Education

Using the Internet in the Primary Classroom: Research Projects

This is the starting place for most schools. The children have a theme or topic to work on, and a series of World Wide Web sites are suggested for research, or a Web search is suggested to find extra information. As teachers who make effective use of computers in their classrooms know, this means a little extra work for the teacher. Do not send the children somewhere you haven't been yourself. Giving children carte blanche to perform Web searches is inviting trouble into your classroom and life.

The main skill involved is the gathering of information. Students who have been taught to ask questions can use them to accomplish this immediate assignment and to lay the groundwork for doing research, which begins with a question. The "go find out about it" research project can begin with students asking questions. Ask them, "What questions can you ask about how to do this assignment?" They may ask such things as:

- Where do I find out about it?
- Where do I start?
- Which references are very general to give the big ideas?
- Which references are too detailed for what I want to know?
- What resources can I use besides books?
- How will I know what is important about the topic?
- How will I know how to organize the ideas?

Notice that these kinds of questions lead students to develop a plan based on a clarification of their goals and what they know about available resources. The essence of this type of research assignment is finding enough information to give a general description. "A" papers hit all the high points on the topic, and are well-organized and well-written. Every student can be guided by the questions that produce a quality description if we give them the proper questioning tools.

A more meaningful, curiosity-driven version of the research project begins with student questions. Students should be able to guide research. The teacher can require types of questions that cannot be answered directly from a book. For example, if a student asks, "Which Civil War general was the best?" the gathering of information eventually leads to a student judgment based upon criteria. This evaluation task involves the student seeking information for the purpose of answering a question—he or she posed a very lifelike and lifelong activity. Instead of an assignment in a high school health class to "go find out about a topic in human sexuality," students discuss dilemmas in human sexuality such as parenting, birth control, and parent/

teen conflict. Their research paper assignment is to choose a dilemma to address in detail, presenting both sides of the issue and drawing a personal conclusion. Under the careful guidance of a teacher, and with support for answering questions they care about, students may find that research papers can become a source of great satisfaction.

Publications

Having a "net presence" is quite different from having "net access." Since the earliest days of the Internet, one of its endearing features has been the concept of information sharing. While many corporations and others charge for their information and services, there is still a substantial "free Internet," and this is where schools (and private users) find themselves. Sharing implies giving as well as receiving, and anyone who has been a net user for more than a short time knows how difficult it can be to stay out of a discussion in a newsgroup or mailing list. Instead of children and teachers just taking information from the Internet and using its resources, they could show what has been done with the resources used and directing others to worthwhile and useful sources of information.

Publishing a school Web page can be a daunting task, especially for someone with little prior experience in computer use or page-design software.

What do you put up on the page? What don't you put up on a school Web page?

First, a decision needs to be made as to why you even want a Web page. Is it to encourage new enrollments? Is it to show off to the world how great you are as a school? Is it so the designer can display his or her HTML skills? Is it so the students can publish their writing, which all the world wants to read? (Probably not.) Is it because the principal knows that a rival school has a Web page and you don't? Once you have decided why you want a Web page, you are better able to work out what should be included.

For starters, don't include too many big graphics. If you want to include a photograph (a good idea), use thumbnails or links rather than having them embedded in the page. Make the site navigable: allow visitors to find what they want and to easily get from page to page. If you want to include students' work, have a reason for it. Respect privacy and copyright laws. Make somebody responsible for the content, ensuring that it is appropriate for your school and keeping in mind your reasons for establishing the Web page.

The following list of recommendations stemmed from some postgraduate students' research into school Web pages in the United States:

1. Share the work of school Web site development. If a school is determined to create a Web site, plans should be developed for the creation and maintenance process. Someone (or a team) should have ongoing responsibility for general oversight. If students contribute to the school pages, the individual (or team) should monitor, and accept responsibility for, the quality and appropriateness of student contributions.

2. Encourage teachers to create their own pages. Since they are most familiar with the content of classroom curriculum and activities, they are more likely to include descriptions of those on their pages. If students contribute to teachers' pages, the teachers should monitor, and accept responsibility for, the quality and appropriateness of student contributions.

3. Limit the number of links to external resources in the following ways:

    - Choose only a few of the best links to include, so that teachers don't get discouraged searching through an extensive list.
    - Describe the linked site.
    - Review links regularly and discard or update links, which can change.
    - Teachers should include links that can be of use to students, organized according to a class project, topic, or activity. Describe what students are expected to do with the information or activity contained at the linked resource.

4. Display student work purposefully. Describe the unit that resulted in the product. Protect students' privacy by including only their first names, without photos, except for class photos without names. Have students annotate their work with a description of what they did, what they learned, and how using the Internet (or other techonologies) was helpful.

5. Be courteous in the use of graphics. Bear in mind that most schools and homes are still modem-based. Keep graphic file size small, and restrict the use of animated graphics. Include graphics only to enhance the meaning of the site. Experiment with new technologies on work pages that are not publicly displayed. Use Java only to facilitate dynamic data collection.

For more information check out:www.teacherzone.com/specialreports/onmenu/onmenu06.html.

Collaborative Projects

There are two types of collaborative learning: local and remote.

Local collaboration

Teachers often send groups of students off to the library to find information on a topic. It is likely that if four groups go, they will come back with four different perspectives and differing information. If we think of the World Wide Web as a huge, disorganized library, then it is a safe bet that groups of students using the Web for research will return with great variety in their findings.

Sharing of information and resources between groups (collaboration) can cut down the research time needed by each group. This type of information searching also opens up some valuable teaching time for the teacher. Questions may arise such as: How do we know this is right? Why don't these documents agree on basic information? Teachers must be prepared to answer these questions.

Around the fourth grade, it is a good idea to introduce the concept of triangulation and cross-checking information. Likewise, what do you do when a child performs a Web search that returns 200,000 hits? Most people don't want to wade through the results. Boolean logic for conducting searches can be taught at this time. These children know the difference between "and," "or," and "not." They can understand that putting a title inside quotation marks will result in a search for the title as a whole as opposed to a search for each word in the title. It is a good idea to first practice these searches off-line using a CD encyclopedia or similar resource.

Remote collaboration

Students can also connect with students in other places to work together on a project. These sorts of projects include "Travel Buddies," where teddy bears are swapped by a pair of classes. The bear then writes home by e-mail every day (with the help of the children in the host class) and tells of its adventures—the things it has seen, the places it has gone, new experiences, as seen through the eyes of the children of the host class. Travel Buddies can be powerful and exciting learning experiences, especially for younger children.

Other remote collaborations include gathering weather information, comparing tastes in chocolate bars, growing "grass-heads" (and posting the results as photos on the Web), and comparing differing cultural perspectives on matters of global history such as political events and wars.

The *Global Schoolhouse* (www.gsn.org/project/index.html), the *Aussie schoolhouse* (www.ash.org.au/cprojects/) and *Oz-Teachers* (rite.ed.qut.edu.au/oz-teachernet/projects/oz-projects.html), are just three places where a start can be made.

Communication

E-mail is easy. You don't even need a powerful computer to send and receive messages. Children (not to mention adults) love the immediacy of e-mail, and receiving mail from anywhere, but especially from a foreign country, excites and motivates learners.

Here are some ideas that teachers have used successfully:

- Connect kids of different environments: country with city, isolated with crowded, and so forth.
- Exchange designs written in Logo.
- Exchange information regarding local culture and customs. For example, Australian kids might request information regarding Halloween, and Canadians might be interested in ANZAC Day.
- Create "Imagination Network," describing the place where you live and what it's like to live there.
- Swap information on current playground crazes and games: What games do we have in common? Can you describe a game well enough so that someone can play it from your description?
- Discuss local issues: What are the people in your town or city fighting for?
- Compare newspapers: What's on the front page of your local paper today? Your state or national paper?
- Correspond in a second language, with native speakers, perhaps.
- Share local history and anecdotes: What do we have in common?
- Collect and share weather information on a particular day at a particular time.
- Describe the view from your window.
- Describe what you will do this weekend.
- Ask the other class what they can do to find out about where I live.
- Investigate immigration and multiculturalism.

- Compare and contrast local legends (Aboriginal, Maori, Inuit, Native American, etc.).
- Conduct a simulation of ground control/space explorers: one group gives commands, the others respond as if they have completed the orders.
- Co-write a story.

Using e-mail, as opposed to the postal service, allows the exchanges to become a little less formal and more frequent. There are good points and bad points about this. More e-mail generally means higher motivation, and if used and coached well, the pen-pal experience can involve some real cross-cultural learning. Frequent, informal exchanges can also lead to discussions dissolving into banal trivia.

ePALS Classroom Exchange

This site (www.epals.com/) provides students with an opportunity to meet and correspond with other students from around the world. Search the online database of classrooms or add yours to the search engine.

Intercultural e-mail classroom connections

Mailing lists are provided by St. Olaf College (www.stolaf.edu/network/iecc) as a free service to help teachers and classes link with partners in other countries and cultures for e-mail classroom pen-pal and project exchanges. There are plenty of other places that offer these services as well.

Ask yourself some questions before you begin an online project. What experience do the children in your class have of using the Internet to do these things? Can they write and send e-mail? Do they have any research or note-taking skills? Can they use the sort of program they need to produce Web pages?

Grouping as an Instructional Strategy

In traditional, single-graded classrooms, the teacher is responsible for trying to meet the various needs of 20 to 30 students. In the multigrade setting, these needs are even more numerous. To manage both the number of students and their range in ability, grouping strategies have been consistently used.

The Nebraska and Iowa Departments of Education (1993) describe grouping patterns at the primary level:

In grouping for learning, teachers consider the needs of both individuals and the group. Teachers organize children into various grouping patterns—for example, whole class, large groups, small groups, triads, pairs, and/or children working individually.

Teachers choose a grouping strategy which is appropriate to the situation and facilitates optimum learning. The composition of groups affects not only how and what children learn, but also the way children feel about themselves and the way they relate to each other. Heterogeneous (mixed-ability) grouping is the most effective way to maximize student success. Long-term, static ability grouping affects children negatively.

Although long-term ability grouping is not acceptable as a constant, grouping children for short periods of time to meet specific instructional needs is appropriate. This type of grouping provides for individualization in that it focuses instruction on the needs of each learner. Individualized instruction does not mean teaching the same lesson over and over again to each child in isolation; it means focusing on the learning needs of the individual, recognizing that more than one child may have similar needs at the same time.

Flexible grouping allows the teacher to instruct children on the basis of interests and learning needs. When children are grouped according to interests, not ability, the opportunities to learn from each other are maximized. Children need opportunities to learn cooperatively and to experience the value of collaboration. Ultimately, social interaction leads to better understanding and a consolidation of learning (p. 30).

Working With Whole-Class, Mixed-Ability Groups

What subjects and strategies are appropriate with mixed-ability groups? And what advantages are there for students and teachers in working with these groups in a whole-class format?

Like adults, students benefit from working in group situations where many different competencies, ages, and points of view are represented. The old saying, "Two heads are better than one," applies here. Students also gain by increased contact with the teacher. In a similar manner, the teacher benefits by having more contact with all the students. Material preparation, monitoring student progress and behavior, and increased student engagement may be realized in working with the whole class.

Further, whole-class instruction, where students of differing abilities and ages work together, leads to improved student relations. When students are organized and taught by grade levels, a status hierarchy often occurs between the grades. When grades are combined and taught together, this hierarchy breaks down, provided that instruction is organized around principles of cooperation.

As mentioned earlier, using recitation to teach basic skills to the whole class is ineffective because a wide range of abilities cannot be successfully accommodated. In addition, the negative effects of public evaluation using convergent questions stigmatizes lower-performing students. However, several activities work well when instructing to a mixed-ability class:

- Speaking before the group (book reports, sharing, speeches, etc.)
- Enhancing ideas during group discussion
- Unit introductions and reviews, followed by level-specific materials
- Demonstrations of experiments
- Some types of information exchange
- Dramatic presentations and stories
- Problem-solving games
- Managerial issues such as classroom rules, scheduling, and planning
- Use of equipment
- Sponge or anticipatory activities

Planning for Whole-Class Instruction

In preparing to teach a lesson to an entire multigrade class, careful planning and preparation are necessary. Figure 3 illustrates an example of a whole-class planning form for learning about sea creatures. The teacher would follow three general steps:

1. Choose a concept, theme, or skill determined to be important to all students.
2. Decide on an activity to introduce the concept to the whole class.

3. Develop appropriate activities for each instructional level and pay special attention to:

   - Subject integration (writing, reading, science, math, etc.)
   - Needed resources
   - References students can use
   - How each level will be introduced to their activities
   - How students will be evaluated

If a teacher has a narrower range of levels to teach, then several grades could complete the same activity. Another approach when working with a narrow range of student levels is to require the same general activity, but add requirements for higher-performing students.

Figure 3 illustrates a process for integrating or combining different subjects into one lesson. Although this lesson focuses on science, students are also engaged in writing, problem solving, art, and research skills. Without integrating subject areas, multigrade teachers would not be able to allocate sufficient time to each subject area.

Instructions

The whole class can be taught together when a common topic can be identified that cuts across the different levels. In general, divergent or open-ended tasks are most appropriate.

1. Determine something all students need and write it in the box entitled, General Presentation Topic or Concept.
2. Decide how you will present the topic or concept—games format, discussion, sharing session, and so forth—and put this in your lesson.
3. Enter the activities for each level into the Level/Group boxes. If your lesson is quite detailed, you may wish to use a separate sheet of paper for filling in the details for each level.
4. Prepare the activities and decide how each will be introduced to the different levels. For younger children, you may need to teach the activity directly, but for older, more self-directed students, the instruction may be written.

FIGURE 3. Whole-Class Planning Form

General Presentation Topic or Concept

Discover and discuss various characteristics of sea creatures
Brainstorm and group according to common features.

Color and label sea creature book.

Activity for Level/Group 1 and 2

Read the story A Day in the Life of Walley Whale. Draw a picture of Walley and write five characteristics you learned about whales.

Activity for Level/Group 3

Create a sea creature book by drawing each creature discussed and writing two or more facts about each one.

Activity for Level/Group 4

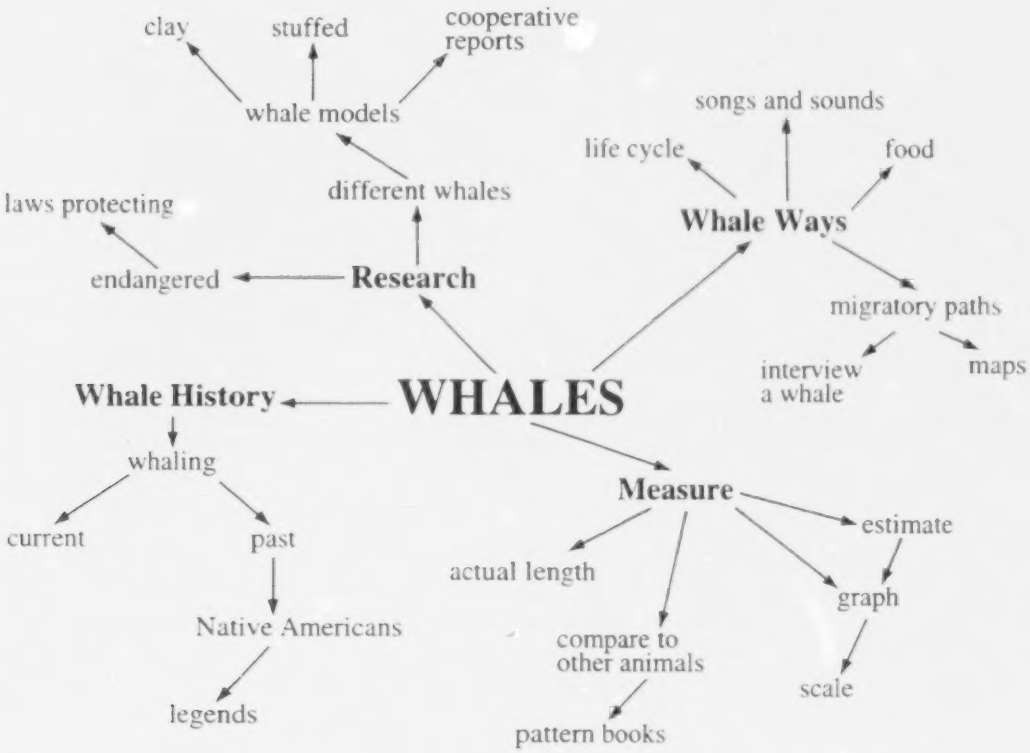
Research a sea creature of your choice and write a short report. Use illustrations.

Activity for Level/Group 5 and 6

(adapted from *Fogarty, 1979*)

Cathy Griswold (1987), a multigrade teacher from Oregon, has developed a planning process for the integration of different subject areas. Using a process called clustering, Griswold picks a theme and then elaborates different related topics. When clustering, the teacher should keep in mind how topics relate to different subject areas. Figure 4 presents an example of clustering around the theme of whales. From the web of whale-related themes, Griswold suggests that the teacher select topics for lesson development, and then develop objectives and activities appropriate for each level.

FIGURE 4. An Example of Topic Development



(adapted from *Griswold, 1987*, Whale Lesson)

Ability grouping

Grouping strategies based on ability are used in various forms in schools and classrooms worldwide, and are certain to arouse discussion, though this is less so in sports and musical areas. The extremes of the debate are probably epitomized on the one hand by students labeled at enrollment to the point that their educational paths are fully determined, and on the other by students clearly in need of a particular educational program but denied it on the basis that all students, no matter how different they and their needs may be, should be provided with the "same" education.

Beneath this often heated debate, the research provides strong support for ability grouping. Grouping on the basis of ability "with appropriate differentiated instruction" is clearly beneficial, not only to high-ability students but also to average and low-ability students (Allan, 1991).

Grouping strategies can be usefully divided into categories:

- Within-class ability grouping
- "Streaming" classes

Some criticism of ability grouping is based on the supposed negative impact on self-esteem for those students placed in low-ability groups. This does not, in fact, appear to be the case (Allan, 1991), with ability grouping having minor, generally positive effects. Indeed, there appear to be positive effects on the self-esteem of slower learners when instruction is received in homogeneously streamed groups. This is partly offset by slight negative effects for high-ability learners in high-ability groups. The negative effects of labeling seem to be overshadowed by the actual daily comparison students make with others in their classroom.

The negative effects of labeling can be reduced by minimizing any conspicuous nature of the labeling involved (for example, using colors or names of famous people to name groups rather than "advanced," "normal," and "remedial") and by retaining as much flexibility as possible in terms of group selection and revision. The "role model" argument in favor of heterogeneous groups appears flawed, as children of low or average ability do not model themselves on fast learners even when they are in the same class (Schunk, 1987).

The weight of argument in favor of ability grouping appears strong with questions now appropriately shifting to how such ability grouping can be most appropriately handled and whether it should be across all ability levels or targeted largely at the gifted and talented.

Ability grouping within classes

Such groupings within mixed-ability classrooms clearly benefit students (Slavin, 1986a). Kulik and Kulik (1987) consider both the within-class ability grouping strategies designed for all students and those targeting only academically talented students. They find the former benefits all students to a small extent, while the latter shows particularly strong advantages for academically talented students.

The problems of self-fulfilling "labeling" of students in terms of ability level can be minimized by:

- Avoiding conspicuous labeling altogether, allowing groups just to be groups with non-judgmental identifiers if identifiers are required
- Adopting a student-centered approach to learning where expectations are student-initiated rather than teacher-imposed
- Not setting group compositions in concrete, but allowing different students to enter and exit as appropriate, including a degree of self-selection and other broad identification procedures

- Facilitating different groups for different curriculum areas or units

There are a multitude of ways to devise and use ability groups, depending on the teacher, class, and subject area. They can range from teacher-nominated to those with large degrees of self-selection based on predetermined tasks with clearly different levels of ability and motivation required.

Ability grouping—streaming classes

Kulik and Kulik (1982) found that students permanently streamed in classes based on ability slightly outperformed students in nonstreamed classes, with the effect strongest in high-ability classes, weaker (but still positive) in middle-level classes, and making no difference in low-ability classes. Slavin (1986b) found no significant positive or negative effects for such permanent streaming.

Looking solely at gifted and talented programs, Kulik and Kulik (1987) found that these students performed significantly better than comparable students in mixed-ability classes.

The research is more uniformly supportive of class ability grouping for specific subject areas. This selective streaming is often applied in mathematics and language arts. Slavin (1986b) suggests this can be particularly effective:

- When it is done for only one or two subject areas
- When it reduces the range of subject skill levels in each group
- When the group composition is frequently reviewed
- When teachers vary the teaching pace accordingly

Kulik and Kulik (1987) found selective streaming advantageous even without these constraints.

An Analysis of the Research on Ability Grouping: Historical and Contemporary Perspectives

Researchers have struggled for decades to find answers to questions about ability grouping. Does anyone benefit from it? Who benefits most? Does grouping harm anyone? How? How much? Why? Research reviewers have never reached agreement about the findings. For every research reviewer who has concluded that grouping is helpful, another has concluded that it is harmful.

Today, however, reviewers are using statistical methods to organize and interpret the research literature on grouping, and they are more hopeful than ever before of coming to a consensus on what the research says. They have painstakingly catalogued the features and results of hundreds of studies, and, with the help of new statistical methods, they are now drawing a composite picture of the studies and findings on grouping.

Reviews have already shown that the effects of grouping programs depend on their features. Some grouping programs have little or no effect on students; other programs have moderate effects; and still other programs have large effects. The key distinction is among (1) programs in which all ability groups follow the same curriculum, (2) programs in which all groups follow curricula adjusted to their ability, and (3) programs that make curricular and other adjustments for the special needs of highly talented learners.

Programs that entail only minor adjustment of course content for ability groups usually have little or no effect on student achievement. In some grouping programs, for example, school administrators assign students by test scores and school records to high, middle, and low classes, and they expect all groups to follow the same basic curriculum. The traditional name for this approach is XYZ grouping. Pupils in middle and lower classes in XYZ programs learn the same amount as equivalent pupils do in mixed classes. Students in the top classes in XYZ programs outperform equivalent pupils from mixed classes by about one month on a grade-equivalent scale. Self-esteem of lower aptitude students rises slightly and self-esteem of higher aptitude students drops slightly in XYZ classes.

Grouping programs that entail more substantial adjustment of curriculum to ability have clear positive effects on children. Cross-grade and within-class programs, for example, provide both grouping and curricular adjustment in reading and arithmetic for elementary school pupils. Pupils in such grouping programs outperform equivalent control students from mixed-ability classes by two to three months on a grade-equivalent scale.

Programs of enrichment and acceleration, which usually involve the greatest amount of curricular adjustment, have the largest effects on student learning. In typical evaluation studies, talented students from accelerated

classes outperform non-accelerates of the same age and IQ by almost one full year on achievement tests. Talented students from enriched classes outperform initially equivalent students from conventional classes by four to five months on grade-equivalent scales.

Guidelines

1. Although some school programs that group children by ability have only small effects, other grouping programs help children a great deal. Schools should therefore resist calls for the wholesale elimination of ability grouping.
2. Highly talented youngsters profit greatly from work in accelerated classes. Schools should therefore try to maintain programs of accelerated work.
3. Highly talented youngsters also profit greatly from an enriched curriculum designed to broaden and deepen their learning. Schools should therefore try to maintain programs of enrichment.
4. Bright, average, and slow youngsters profit from grouping programs that adjust the curriculum to the aptitude levels of the groups. Schools should try to use ability grouping in this way.
5. Benefits are slight from programs that group children by ability but prescribe common curricular experiences for all ability groups. Schools should not expect student achievement to change dramatically with either establishment or elimination of such programs.

Implications for the Multigrade Classroom

Many of these findings on ability grouping need to be interpreted in light of the unique organizational patterns found in multigrade settings. Taken as a whole, this research evidence strongly supports mixed-ability classroom organization, which is normal in the multigrade classroom. Although this body of research does not reflect the extreme variation in student ability found in multigrade settings, it does provide guidelines for using ability grouping while maintaining the integrity of the heterogeneous class.

Learning Centers

Learning centers are independent stations set up throughout the classroom to cover a variety of academic subjects (math, writing, music). All the learning centers are thematically designed. Many themes can last between three and nine weeks. This makes learning more indepth and meaningful for the children, and the planning and implementation more user-friendly for the teacher.

Center activities are open-ended whenever possible to encourage exploring subjects to a satisfying conclusion. Centers are used for reinforcement, enrichment, remediation, and review. The learning center block of time in an instructional day is often the meat of the program. While students are engaged in independent learning activities, the teacher is allowed to work with students in small groups to teach specific language areas or math skills and to assess the students' progress. In this environment, the teacher is the facilitator of learning rather than the dictator of it. Students are allowed to learn on their own developmental timeline, construct their own meaning, and experience success at their own levels.

Management of Learning Centers

Management is the key when using learning centers. The number of centers in a classroom varies between teachers and classroom size. Many teachers have 20 or more centers in the room at a given time. These centers are both fluid and constant to meet academic requirements while allowing for specific learning experiences only available within the given theme.

The constant (or generic) centers are the centers that always exist in the classroom. These would be centers like Poetry, Math, Reference, Big Book, Art, Science, and Publishing. These centers are located in the same part of the room all year, so it is important to make sure they are strategically placed (e.g., Art Center next to the sink or Library Center in a quiet corner).

These centers do not change, but new content is often added and old content is removed. The fluid centers are activities set up by the teacher that relate specifically to the theme of study. For example, if the class is studying a unit on Native American culture, a special center might be created to sample foods or weave a miniature Navajo rug.

In this type of environment the children play a big part in managing the classroom. Children plan their own day, and teachers are there to facilitate the learning. In many rooms children use planning sheets or contracts to ensure that they are getting a well-rounded learning experience. These planning sheets or contracts can be kept in folders that the student can refer to and keep completed work in. Some rooms have "Must Do" centers and "Choice" time, and credit will be given to students for quality and/or quantity of work.

Because of this, material preparation requires careful planning and organization. The following steps have been identified as important for learning centers to be effective:

1. Select a subject area. *Example: Reading*
2. Determine the skill or concept to be taught, reinforced, or enriched. *Example: To teach the skill of rhyming*
3. Develop the skill or concept into a learning activity: manipulating (cutting, pasting, matching), experimenting (observing, charting, keeping a log), listening, or viewing. *Example: Students will learn about rhyming by listening to a tape of rhymes and matching rhyming words to rhyming pictures.*
4. Prepare the skill or concept into an *applying* activity: filling in, arranging in order, putting together, taking apart, listing, classifying, matching, tracing, writing, locating, or labeling. *Example: Student will apply the rhyming skill to games or worksheets which ask them to fill in the rhying words, list works which rhyme, and classify words with the same rhyming sounds.*
5. Incorporate the skill or concept into an *extending* activity: comparing, developing your own, researching, reconstructing, finding what other, or deciding what if. *Example: Students will extend their skill or rhyming by writing their own poem, finding out about Edgar Allan Poe, or rewriting a nursery rhyme.*
6. Place all the games, worksheets, charts, etc., together in one area of the room for children to use in a self-selected manner.
7. Develop some form of record keeping and evaluation so that both students and the teacher can account for time spent and learning accomplished at the learning center.

Putting It All Together

Using various grouping patterns for reading instruction, a weekly schedule might take on a quite different appearance than the one described earlier.

Time	Subject	Monday	Tuesday	Wednesday	Thursday	Friday
8:30 to 10:30	Reading	Textbook (by level)	Textbook (by level)	Multilevel skill grouping	Learning centers & teacher conferences	Review & interest groups

Many variations of this sample schedule are possible, keeping in mind the need to balance available teacher time, teacher experience, student needs, and maturity levels. Most important, it is better to go slow and plan well than to leap into a new strategy and have it fail.

Two case examples

The two case examples of grouping that follow were submitted by two multigrade teachers during the Ashland, Oregon, conference on multigrade instruction. The first example comes from Joel Anderson, who teaches grades 4–6 at the Onion Creek School in northeast Washington. Anderson's example is especially interesting because it covers a 15-year period of time, describing the different changes that have occurred at Onion Creek School and how they were managed. The second example comes from Barbara Robinson, a K–3 teacher from southern Idaho. Robinson's example illustrates how the community can help ease the demands of grouping across four grade levels. Both case examples illustrate, with rich detail, the ingenuity and creativity of effective multigrade teachers.

Case Example 1: History and Philosophy on Grouping at Onion Creek School

By Joel Anderson, Multigrade Teacher, Grades 4–6

When I came to Onion Creek School 15 years ago, it was a one-room school. With my wife's help the school was able to have two teachers (for the price of one), which helped me maintain my sanity. She taught first through third, and I taught fourth through sixth.

Since then the school has gone through many changes. Enrollment dropped; my wife found a paying job. I worked for awhile as the only teacher with the help of an aide. Then enrollment increased and my wife was hired to teach primary, and I went back to teaching fourth through sixth. Enrollment increased more; we added kindergarten and another teacher, so for awhile I taught only fifth and sixth. Now I am back to teaching fourth through sixth.

From the beginning, I thought I could only teach the students as one large group, taking into account the individual differences of the students. So we all worked on the same units. We have very few textbooks in our class; most all lessons are designed by me. (Exceptions are our current SRA Spelling series, our Junior Great Books used for interpretive reading discussions, and our Barnell-Loft reading skills series.) Over the years I have designed and redesigned units on different topics in science and health, social studies, reading, and so forth. I present a lesson to all my students together. Some of the topics, especially in language, have been addressed year after year, though I usually change the form of the lesson. In social studies and science, I teach topics on a three-year cycle. (A few topics in social studies that are taught schoolwide to all grades at once are taught on a six-year cycle.) This way we cover most of the material that is covered in most schools over the fourth- through sixth-grade span.

Initially my units were designed for individual work. Students usually did most of the work by themselves. The requirements for each child varied according to the child's grade and/or ability level. I had and still have different expectations for students of different grades, so everyone in my class would work on the same topic but the unit requirements would call for less from the younger students and more from the older ones. Tests and other evaluative methods would take into account the differences in age and ability.

Currently, I still teach units and make a lot of allowances for individual differences, but I now encourage much more cooperative work. Students do much of the work in pairs or small groups. Usually, I choose the group members, but on some occasions students choose their own partners.

I have come to agree with those supporting cooperative learning that individualized learning and competitive learning have many negative aspects, which are especially accentuated in a multigraded class where students are together for two, three, or more years.

When students are together for so long, they need to learn to respect and care for each other. There are bound to be large differences in ability,

especially when there are students from three grades in the class, but when students work cooperatively with students in higher or lower grades, I find that they all learn. All students have strengths and weaknesses. Having to work in small groups with all the other students in the class, children learn to make use of each other's skills. They help each other more and share their talents. They learn to appreciate the strengths that the other students possess. They learn that in doing so they can best succeed as a group. Working together they also learn tolerance. They don't always like each other, but, again, if they are going to succeed they must be tolerant of each other's quirks and weaknesses.

Groups

I have my students work in groups as much as possible. Students are seldom grouped by age or grade; in most cases they are put in cross-graded groups. Years ago we got rid of desks and had students sit at tables to encourage group work. In my class students sit three to a table, and during the year each child sits and works with practically everyone else in the class several times. I usually switch seating every two weeks.

How To Organize Groups

Draw cards

I use this method sometimes to arrange my students in tables or to place them in groups. If I want three in a group, I take three cards of each denomination. Then each child draws a card and goes with the other children who drew the same denomination, say all Aces are in one group, Twos in another, and so forth. This method results in heterogeneous groups. There may be three boys in a group, three children from the same grade, or two girls and a boy each from a different grade. I have found that my students like this method for placing children at tables as long as they draw new tables every two weeks and don't have to sit at the same table or with any of the same people two times in a row.

Draw names from a jar

Early in the year I wrote the name of each of my students on a little card and placed the card in a jar. I draw names from the jar any number of times throughout the day. When holding a discussion I might draw names of students who are asked to respond or I might draw names of children to respond to a problem; I might draw a name and ask for an answer from any of the children sitting at that child's table; or, when playing a game where children play in pairs, I might draw two names at a time to make pairs. The randomness of this method helps to ensure that children work at times with all the other children in the class, so there might be a low-

achieving fourth-grader working with a high-achieving sixth-grader. The children learn to take into account the others' strengths and weaknesses, and they learn to work together and help each other.

Teacher-made groups

There are a few times when I organize groups. I do this most often when children are playing simulation games or working on large group projects. I try to set up the groups so there is a good mix according to age and ability.

Student-made groups

There are also a few times when I let the students pick their own groups. This most often occurs when students are working on projects, say in social studies or science, and a couple of students want to work together on the same topic.

Table Groups/Groups of Three or Four

For many of my activities, I organize my students into table groups or groups of three. (Marilyn Burns in The Math Solution suggests cooperative groups of four.) I have my students sitting at tables of three students each. My tables are labeled A, 2, 3, 4, 5, 6. These labels correspond to the value of cards, so to place my students I have them draw from a deck of 18 playing cards. Any time I want to change groups, I have the students draw again from the deck of cards. To foster cooperation, I have the students follow three rules (from Marilyn Burns):

1. You are responsible for your own work and behavior.
2. You must be willing to help any group member who asks.
3. You may ask the teacher for help only when everyone in your group has the same question.

These rules encourage good cooperative skills and help to lessen some of the demands on me. Students must work together and help each other (when asked). Rule 3 eliminates many questions about assignments that I've been asked to answer over and over. It also forces students to do more talking among themselves about the assignments. They get more chances to express their ideas and clarify their thinking.

When I Use Groups in My Class

Math—computation

When working on computation strand work, students most often work on their own at their own pace. If two (or more) students are working on the same level, they may choose to work together. Or if someone is having problems learning a specific concept, that person may get help from someone at the same table or from anyone else in the room.

Math—problem solving, etc.

For about half of our math period, we usually all work together. I may present a short lesson on problem solving, geometry, numbers, and so forth, and may offer problems to be solved. We may work on them as a class and I might draw names of students from the jar to get different responses, or I might ask the students to work on the problems at their table and present one answer agreed upon by all three students at their table.

Reading

I have an individualized reading program where children usually work on their own. They mostly read graded library books and work on reading skills from a Barnell-Loft series.

I also use the Junior Great Books series. I use this for teaching critical reading skills. I group students according to their reading ability into three groups. I meet with each group once every two weeks for a 45-minute discussion of a story read.

In the afternoons we have SSR (Sustained Silent Reading). Normally students read quietly by themselves for the 15-minute period, but sometimes students pair up with students from the primary class and read with them.

Language—storytelling

We do a lot of oral work in my class, and students often work together on these activities. For storytelling, students often work by themselves and then in pairs. First they learn a story, then they practice it on a partner (usually of their choosing) until they are ready to tell the story to the class.

Language—plays

We have done plays when studying fairy tales and legends; we have done them to show specific incidents in history; and we have done them for fun and experience. Usually I draw students' names from a jar to find members for a group. *Aesop in the Afternoon* has a number of plays for small and large groups that are great fun to do.

When studying fairy tales this year, I had the three students at each table act out a traditional Grimms' fairy tale. Then as a preliminary exercise for writing their own fairy tales, the groups made up a fairy tale following traditional themes. Then they got together and wrote their own versions of the play they had put on.

Language—tell-and-draw stories

My wife has done this activity with my class. At first, my wife chose students for groups because some stories are easier to do than others. Students had to learn the stories and practice them for their small groups. Then they had to practice them in front of their parents. Finally, they did the story for our class or for the preschool or primary students.

Language—oral presentations

Most oral presentations or reports are done individually, but sometimes students work in pairs or even in groups of three or four to make special reports for science or social studies. Sometimes the students choose their own partners, and sometimes I draw names for groups. The students usually write out a script so each participant knows what to say.

Language—daily oral language

To help learn grammar, punctuation, and usage skills, we do a daily activity called Daily Oral Language. Two sentences are written on the board with a number of errors. Students are to rewrite the sentences correctly. They work together with the other students at their table, comparing and correcting their papers until they think they have written the sentences correctly. Then I draw a student's name from the jar and ask that person to tell me how to correct the sentence on the board. If the student is correct, all the students at the table are rewarded. Once a week I collect and correct all the papers, and all the students at one table get the lowest grade given to any person at that table.

Science

When doing science, all the students in the three grades work on the same activities. I have found that the TOPS units work great. Students get hands-on experiences. I usually have students work together in their table groups so they can interact and help each other out and share their discoveries. Other times we might have units that require book research and oral or written reports. Then I often allow two people to work together on the same topic and make a joint presentation to the class.

Social studies

I use a unit approach in social studies. Each student is given a collection of papers that list the required work expected of the child plus a description of the activities that may be done. The requirements vary with the ability level of each child. I expect more from the older students with more ability than I do from the younger students. The unit usually involves a lot of individual work, though I allow students to work with each other on parts of it and to drill each other on such things as map skills. Projects are often a requirement, and, as in science, some of the projects are designed for two or more students. In such cases I allow students to work with a friend if they both chose the same topic, or, if I expect a large group project, I'll draw students' names from the jar to organize them into groups.

I also use simulation games purchased from *INTERACT*. For these activities students have to be in large groups, and in most cases I pick the groups, trying to get a good mixture of students in age and ability.

Case Example 2: Instructional Grouping at Arbon Elementary School

By Barbara Robinson, Multigrade Teacher, Grades K–3

Arbon Elementary School employs a staff of three: two teachers and an aide. We serve children in kindergarten through sixth grade. Our building has two classrooms, one housing grades K–3 and the other grades 4–6. We have a large, all-purpose room downstairs. Our aide works with the kindergartners under the supervision of the primary teacher.

Reading and language

We frequently have two groups in kindergarten in reading. Those who know the letter sounds begin reading a series called Primary Phonics. Those who don't know the letters or letter sounds begin in a series Getting Ready to Read. The first-, second-, and third-graders are cross-grouped according to reading abilities. There may be as many as seven reading groups, but the upper-level groups are not met with every day.

One day a week the groups from level 1–2 and up read from an SRA kit. These groups are for basal readers and supplementary reading. To decrease interruptions when working with the small groups, we use the "buddy system." The students must first check with everyone in their group to answer their question before they ask the teacher for help. Language experience activities are taught as a whole-group activity with grades 1–3. The second half of the year the kindergartners participate also.

Math and science

Students are grouped according to grade level in math. We use some peer tutoring in problem areas but have not used ability grouping in this area. Science is taught by grouping grades 1–3 and 4–6. For grades 1–3, we usually use third-grade material. To do reading assignments or worksheets, we pair up a mature reader with a younger one. Activities and experiments are done as a whole or in groups. The groups are varied according to the project.

Social studies

In the primary room we group the first and second grades together for social studies. Third grade is taught separately. This arrangement is for instruction from a social studies text. For grades 1–3, we also do social studies units on topics such as Indians, the Lewis and Clark Expedition, Eskimos, and so forth. These units are taught to the whole primary class. The fourth through sixth grades have successfully been taught as a group using a three-year curriculum consisting of Idaho history, United States history, and world history.

Music and physical education

In music we started out using Silver Burdett's program, second-grade material for grades 1–3, and fifth-grade material for grades 4–6. This didn't work very well for us. We all lost interest in music. Then, one of our musically talented dads volunteered to teach music, which he did for a year, and that worked well. He taught grades 1–3 and grades 4–6 as two groups. The next year we decided to try recorders. Neither of the teachers had ever played them before, but we both had musical backgrounds, so we thought we'd give them a try. They have been a great success. We started out just teaching the first, second, and third grades together. The next year we added the new first-graders. The past two years we've taught in two groups, first and

second combined and third through sixth. We wrote the music out on large sheets of paper and pinned it to the board. We directed note by note; that ensured that everyone was on the right note at the right time. We do recorders only the second half of the year. In the primary room, the first half of the year we sing and play musical games. We have discovered there are many good children's albums with songs and activities the children enjoy. To help the children learn the lyrics, we print them on large pieces of paper. It's not long before they have them memorized.

In physical education (PE) this past year we have been fortunate in having had talented volunteers from our community to help with instruction. For these subjects the students were grouped with grades 1–3 together and 4–6 together. The kindergartners were sometimes grouped with the first- through third-graders and sometimes worked separately.

Review

From reviewing these two case examples, you can see that each teacher relied heavily on the ability of students to work together. Both teachers used some form of a "buddy system" where students helped each other solve problems, thus freeing the teacher to help students without interruption. Students were also grouped across grade levels and taught as a class in numerous subjects, such as language arts, science, and social studies. These are just two of the many strategies multigrade teachers employ to produce effective instruction with a wide range of student abilities.

However, beneath these strategies lies a complex process of teaching and socialization. Students do not just help each other and work cooperatively because the teacher expects it. Successful multigrade teachers translate their expectations for cooperation into actions through modeling, creating opportunities for students to work together, and specifying the characteristics of effective cooperation. During the last 15 years, a growing body of research on cooperation in the classroom has produced invaluable information to aid teachers who want to implement cooperative workgroups in their classrooms. The following section provides an overview of this research along with strategies and guidelines for facilitating cooperation.

Collaborative Learning

Effective communication and collaboration are essential to becoming a successful learner (Tinzman, Jones, Fennimore, Bakker, & Pierce, 1990). It is primarily through dialogue and examining different perspectives that students become knowledgeable, strategic, self-determined, and empathetic. Moreover, involving students in real-world tasks and linking new information to prior knowledge requires effective communication and collaboration among teachers, students, and others. Indeed, it is through dialogue and interaction that curriculum objectives come alive. Collaborative learning affords students enormous advantages not available from more traditional instruction because a group, whether it be the whole class or a learning group within the class, can accomplish meaningful learning and solve problems better than any individual can alone.

This focus on the collective knowledge and thinking of the group changes the roles of students and teachers and the way they interact in the classroom. Significantly, a groundswell of interest exists among practitioners to involve students in collaboration in classrooms at all grade levels.

Characteristics of a Collaborative Classroom

Collaborative classrooms seem to have four general characteristics. The first two capture changing relationships between teachers and students. The third characterizes teachers' new approaches to instruction. The fourth addresses the composition of a collaborative classroom.

Shared knowledge among teachers and students

In traditional classrooms, the dominant metaphor for teaching is the teacher as information giver; knowledge flows only one way, from teacher to student. In contrast, the metaphor for collaborative classrooms is shared knowledge. The teacher has vital knowledge about content, skills, and instruction, and still provides that information to students. However, collaborative teachers also value and build upon the knowledge, personal experiences, language, strategies, and culture that students bring to the learning situation.

Consider a lesson on insect-eating plants, for example. Few students, and perhaps few teachers, are likely to have direct knowledge about such plants. Thus, when those students who do have relevant experiences are given an opportunity to share them, the whole class is enriched. Moreover, when students see that their experiences and knowledge are valued, they are motivated to listen and learn in new ways, and they are more likely to make important connections between their own learning and "school" learning. They become empowered. This same phenomenon occurs when the knowledge parents and other community members have is valued and used within the school.

Additionally, complex thinking about difficult problems, such as world hunger, begs for multiple ideas about causes, implications, and potential

solutions. In fact, nearly all of the new curricular goals are of this nature—for example, mathematical problem solving—as are new requirements to teach topics such as AIDS. They require multiple ways to represent and solve problems and many perspectives on issues.

Shared authority among teachers and students

In collaborative classrooms, teachers share authority with students in specific ways. In most traditional classrooms, the teacher is largely, if not exclusively, responsible for setting goals, designing learning tasks, and assessing what is learned.

Collaborative teachers differ in that they invite students to set specific goals within the framework of what is being taught, provide options for activities and assignments that capture different student interests and goals, and encourage students to assess what they learn. Collaborative teachers encourage students' use of their own knowledge, ensure that students share their knowledge and their learning strategies, treat each other respectfully, and focus on high levels of understanding. They help students listen to diverse opinions, support knowledge claims with evidence, engage in critical and creative thinking, and participate in open and meaningful dialogue.

Suppose, for example, the students have just read a chapter on colonial America and are required to prepare a product on the topic. While a more traditional teacher might ask all students to write a 10-page essay, the collaborative teacher might ask students to define the product themselves. Some could plan videotape, some could dramatize events in colonial America, others could investigate original sources that support or do not support the textbook chapter and draw comparisons among them, and still others could write a 10-page paper. The point here is twofold: (1) students have opportunities to ask and investigate questions of personal interest, and (2) they have a voice in the decisionmaking process. These opportunities are essential for both self-regulated learning and motivation.

Teachers as mediators

As knowledge and authority are shared among teachers and students, the role of the teacher increasingly emphasizes mediated learning. Successful mediation helps students connect new information to their experiences and to learning in other areas, helps students figure out what to do when they are stumped, and helps them learn how to learn. Above all, the teacher as mediator adjusts the level of information and support to maximize students' ability to take responsibility for learning. This characteristic of collaborative classrooms is so important, we devote a whole section to it below.

Heterogeneous groupings of students

The perspectives, experiences, and backgrounds of all students are important for enriching learning in the classroom. As learning beyond the classroom increasingly requires understanding diverse perspectives, it is essential to provide students opportunities to do this in multiple contexts in schools. In collaborative classrooms where students are engaged in a thinking curriculum, everyone learns from everyone else, and no student is deprived of this opportunity for making contributions and appreciating the contributions of others.

Thus, a critical characteristic of collaborative classrooms is that students are not segregated according to supposed ability, achievement, interests, or any other characteristic. Segregation seriously weakens collaboration and impoverishes the classroom by depriving all students of opportunities to learn from and with each other. Students we might label unsuccessful in a traditional classroom learn from "brighter" students, but, more important, the so-called brighter students have just as much to learn from their more average peers. Teachers beginning to teach collaboratively often express delight when they observe the insights revealed by their supposedly weaker students.

Shared knowledge and authority, mediated learning, and heterogeneous groups of students are essential characteristics of collaborative classrooms. These characteristics, which are described below, necessitate new roles for teachers and students that lead to interactions different from those in more traditional classrooms.

Teacher Roles in a Collaborative Classroom

Across this nation, teachers are defining their roles in terms of mediating learning through dialogue and collaboration. While mediation has been defined in different ways, we define mediation here as facilitating, modeling, and coaching. Most teachers engage in these practices from time to time. What is important here is that these behaviors (1) drive instruction in collaborative classrooms, and (2) have specific purposes in collaborative contexts.

Facilitator

Facilitating involves creating rich environments and activities for linking new information to prior knowledge, providing opportunities for collaborative work and problem solving, and offering students a multiplicity of authentic learning tasks. This may first involve attention to the physical environment. For example, teachers move desks so that all students can see each other, thus establishing a setting that promotes true discussion. Teachers may also wish to move their desks from the front of the room to a less prominent space.

Additionally, teachers may structure the resources in the classroom to provide a diversity of genres and perspectives, to use and build upon cultural artifacts from the students' homes and communities, and to organize various learning activities. Thus, a collaborative classroom often has a number of projects or activity centers using everyday objects for representing numerical information in meaningful ways and for conducting experiments that solve real problems. These classrooms also boast a rich variety of magazines, journals, newspapers, audiotapes, and videos that allow students to experience and use diverse media for communicating ideas.

Facilitating in collaborative classrooms also involves people. Inside the classroom, students are organized into heterogeneous groups with roles such as team leader, encourager, reteller, recorder, and spokesperson. (See Cohen, 1986, for further elaboration.) Additionally, collaborative teachers work to involve parents and community members. Examples are: inviting parents to come and experience the thinking processes involved in conducting experiments using everyday objects so that they can provide such learning experiences at home; involving parents and the community in academic tasks in which their students are engaged; and performing community services such as producing a local newspaper.

Another way that teachers facilitate collaborative learning is to establish classrooms with diverse and flexible social structures that promote the sort of classroom behavior they deem appropriate for communication and collaboration among students. These structures are rules and standards of behavior, fulfilling several functions in group interaction and influencing group attitudes. Particular rules depend, of course, on the classroom context. Thus, teachers often develop them collaboratively with students and review or change them as needed. Examples of rules include giving all members a chance to participate, valuing others' comments, and arguing against (or for) ideas rather than people. Examples of group functions include asking for information, clarifying, summarizing, encouraging, and relieving tension. To facilitate high-quality group interaction, teachers may need to teach, and students may need to practice, rules and functions for group interaction.

Finally, teachers facilitate collaborative learning by creating learning tasks that encourage diversity but that aim at high standards of performance for all students. These tasks involve students in high-level thought processes such as decisionmaking and problem solving, which are best accomplished in collaboration. These tasks enable students to make connections to real-world objects, events, and situations in their own and an expanded world, and tap their diverse perspectives and experiences. Learning tasks foster students' confidence and, at the same time, are appropriately challenging.

Model

Modeling has been emphasized by many local and state guidelines as sharing one's thinking and demonstrating or explaining something. However, in collaborative classrooms, modeling serves to share with students not only what one is thinking about the content to be learned, but also the process of communication and collaborative learning. Modeling may involve thinking aloud (sharing thoughts about something), or demonstrating (showing students how to do something in a step-by-step fashion).

In terms of content, teachers might verbalize the thinking processes they use to make a prediction about a scientific experiment, to summarize ideas in a passage, to figure out the meaning of an unfamiliar word, to represent and solve a problem, to organize complicated information, and so on.

Just as important, they may also think aloud about their doubts and uncertainties. This type of metacognitive thinking and thinking aloud when things do not go smoothly are invaluable in helping students understand that learning requires effort and is often difficult for people.

With respect to group process, teachers may share their thinking about the various roles, rules, and relationships in collaborative classrooms. Consider leadership, for example. A teacher might model what he or she thinks about such questions as how to manage the group's time or how to achieve consensus. Similarly, showing students how to think through tough group situations and problems of communication is as valuable as modeling how to plan an approach to an academic problem, monitoring its progress, and assessing what was learned.

A major challenge in mediating learning is to determine when it is appropriate to model by thinking aloud and when it is useful to model by demonstrating. If a teacher is certain that students have little experience with, say, a mathematical procedure, then it may be appropriate to demonstrate it before students engage in a learning task. (This is not to say that the teacher assumes or states that there is only one way to perform the procedure. It is also important to allow for individual variations in application.) If, on the other hand, the teacher believes students can come up with the procedure themselves, then he or she might elect to ask the students to model how they solved the problem; alternatively, the teacher could give students hints or cues.

Coach

Coaching involves giving hints or cues, providing feedback, redirecting students' efforts, and helping them use a strategy. A major principle of coaching is to provide the right amount of help when students need it—neither too much nor too little—so that students retain as much responsibility as possible for their own learning.

For example, a collaborative group of junior high students worked on the economic development of several nations. They accumulated a lot of information about the countries and decided that the best way to present it was to compare the countries. But they were stymied as to how to organize the information so they could write about it in a paper, the product they chose to produce. Their teacher hinted that they use a matrix—a graphic organizer they had learned—to organize their information. When the group finished the matrix, the teacher gave them feedback. In so doing, he did not tell them it was right or wrong, but asked questions that helped them verbalize their reasons for completing the matrix as they did. The principle the teacher followed was to coach enough so that students could continue to learn by drawing on the ideas of other group members.

Student Roles in a Collaborative Classroom

Students also assume new roles in the collaborative classroom. Their major roles are collaborator and active participator. It is useful to think how these new roles influence the processes and activities students conduct before, during, and after learning. For example, before learning, students set goals and plan learning tasks; during learning, they work together to accomplish tasks and monitor their progress; and after learning, they assess their performance and plan for future learning. As mediator, the teacher helps students fulfill their new roles.

Goal setting

Students prepare for learning in many ways. Especially important is goal setting, a critical process that helps guide many other before-, during-, and and after-learning activities. Although teachers still set goals for students, they often provide students with choices. When students collaborate, they should talk about their goals. For example, one teacher asked students to set goals for a unit on garbage. In one group, a student wanted to find out if garbage is a problem, another wanted to know what happens to garbage, a third wanted to know what is being done to solve the problem of garbage. The fourth member could not think of a goal, but agreed that the first three were important and adopted them. These students became more actively involved in the unit after their discussion about goals, and at the end of the unit, could better evaluate whether they had attained them.

Designing learning tasks and monitoring

While teachers plan general learning tasks, for example, to produce a product to illustrate a concept, historical sequence, personal experience, and so on, students assume much more responsibility in a collaborative classroom for planning their own learning activities. Ideally, these plans derive in part from goals students set for themselves. Thoughtful planning by the teacher ensures that students can work together to attain their own goals and capitalize on their own abilities, knowledge, and strategies within the parameters set by the teacher. Students are more likely to engage in these tasks with more purpose and interest than in traditional classrooms.

Self-regulated learning is important in collaborative classrooms. Students learn to take responsibility for monitoring, adjusting, self-questioning, and questioning each other. Such self-regulating activities are critical for students to learn today, and they are much better learned within a group that shares responsibility for learning. Monitoring is checking one's progress toward goals. Adjusting refers to changes students make, based on monitoring, in what they are doing to reach their goals. For example, a group of students decided that the sources of information on the Civil War they selected initially were not as useful as they had hoped, so they selected new materials. Another group judged that the paper they had planned to write would not accomplish what they thought it would the way they had organized it, so they planned a new paper.

Students can further develop their self-regulating abilities when each group shares its ideas with other groups and gets feedback from them. For example, in the first video conference, elementary students were shown collaborating in small groups to define and represent math problems. Working in small groups, the children determined what was being asked in story problems and thought of ways to solve the problems. Then each group shared its ideas with the whole class. Members of the class commented on the ideas. As students developed problem-solving skills with feedback from other groups, they learned more about regulating their own learning, a skill they could use in the future.

Assessment

While teachers have assumed the primary responsibility for assessing students' performance in the past, collaborative classrooms view assessment much more broadly. That is, a major goal is to guide students from the earliest school years to evaluate their own learning. Thus, a new responsibility is self-assessment, a capability that is fostered as students assess group work.

Self-assessment is intimately related to ongoing monitoring of one's progress toward achievement of learning goals. In a collaborative classroom, assessment means more than just assigning a grade. It means evaluating whether one has learned what one intended to learn, the effectiveness of learning strategies, the quality of products and decisions about which products reflect one's best work, the usefulness of the materials used in a task, and whether future learning is needed and how that learning might be realized.

Collaborative classrooms are natural places in which to learn self-assessment. And because decisions about materials and group performance are shared, students feel more free to express doubts, feelings of success, remaining questions, and uncertainties than when they are evaluated only by a teacher. Furthermore, the sense of cooperation (as opposed to competition) that is fostered in collaborative work makes assessment less threatening than in a more traditional assessment situation. Ideally, students learn to evaluate their own learning from their experiences with group evaluation.

Challenges and Conflicts

When teachers and schools move from traditional to collaborative instruction, several important issues are likely to arise. They are important concerns for teachers, administrators, and parents.

Classroom control

Collaborative classrooms tend to be noisier than traditional classrooms. This is a legitimate issue for a number of people. Some teachers believe that noisy classrooms indicate lack of discipline or teacher control. In such situations, they argue, students cannot learn. Collaborative classrooms do not lack structure. Indeed, structure becomes critical. Students need opportunities to move about, talk, ask questions, and so on. Thus, we argue that the noise in a smoothly running collaborative classroom indicates that active learning is going on. However, students must be taught the parameters within which they make their choices. Rules and standards must be stressed from the beginning, probably before any collaboration is initiated, and reviewed throughout the school year.

Preparation time for collaborative learning

Teachers and administrators may believe that new lesson plans must be formed for these classrooms. To a certain extent, they are correct. But many teachers already have created engaging units and activities that are easily implemented in a collaborative classroom. Furthermore, teachers can begin slowly making changes in one subject area or unit within a subject area, probably one they are already very comfortable teaching, and then adding other subjects and units. Teachers can also share their plans with each other. Indeed, if we expect students to collaborate, we should encourage teachers to do the same! Principals and curriculum specialists can also collaborate with teachers to plan effective segments of instruction. Moreover, there is a trade-off between the extra planning time needed and benefits such as less time spent correcting lessons, increased student motivation, and fewer attendance and discipline problems.

Individual differences among students

This information has been touched on in the section on heterogeneous grouping. Nevertheless, many people will still doubt that individual differences can be better addressed in collaborative classrooms than in traditional classrooms with homogeneous grouping.

A major question people have concerns the advantage collaboration affords gifted or high-achieving students. There are two tough issues here. First, many teachers do not believe that low-achieving students have much to contribute to the learning situation; in effect, they feel these students have no prior experiences or knowledge of value. Second, teachers worry that high-achieving students will be held back.

In response to the first issue, many collaborative teachers have expressed surprise when seemingly less-able students have had insights and ideas that went way beyond what teachers expected. Further, if each student contributes something, the pool of collective knowledge will indeed be rich. In answer to the second concern, data suggest that high-achieving students gain much from their exposure to diverse experiences and also from peer tutoring

(Johnson & Johnson, 1989). Also, students who may be high-achieving in one area may need help in other areas.

Teachers and others also wonder whether shy students can fully participate in a classroom that depends so much on dialogue. We suggest that these students might feel more comfortable talking in small groups that share responsibility for learning. Furthermore, interaction between learners can happen in ways other than oral dialogue; for example, writing and art.

A related concern is that many schools are structured homogeneously, and so an individual teacher cannot form heterogeneous groups without involving changes in the entire school. A whole class of "low" readers is taught by one teacher, "average" by another. High school tracks are even more systematically entrenched. Clearly, these practices are not conducive to collaborative learning and require systemwide restructuring. Individual teachers or groups of teachers can initiate dialogue on the problem, however.

Individual responsibility for learning

This concern is a difficult one to solve unless major changes in other areas of schooling are also undertaken. Students are used to being graded for individual work; parents expect to know how their students fare in school. School staff and state departments of education depend on traditional assessments. In collaborative classrooms, it is often difficult to assign individual grades. Some teachers give group grades, but many students and parents are uncomfortable with these. Ideally, assessment practices should be changed so that they are consistent with collaboration, with a new view of learning, and with a thinking curriculum.

Conflict of values

Many teachers do not feel comfortable allowing students to initiate dialogue, determine topics, or explore perspectives other than the teacher's. This reluctance is in conflict with the way effective caregivers teach their children in the home. Teachers often have difficulty helping students construct meaning, especially linking the new information to the prior knowledge and culture of the students. In part, this is because many teachers believe that their role is to transmit knowledge; because they are held accountable for teaching discrete skills. In one poignant example, a student teacher's concern for grammar and punctuation prevented her from seeing the sophistication and meaning in what the child was actually communicating in a book report.

The reluctance people feel when asked to make major changes in the way they do things is clearly the most serious issue of those discussed here. Hardly a person exists who eagerly gives up familiar ways of behaving to attempt something that is unknown and likely to have many implementation challenges.

What Is the Research Base for Collaborative Learning? Vygotskian Theory

Lev Semenovich, a developmental theorist and researcher who worked in the 1920s and early '30s, has influenced some of the current research on collaboration among students and teachers and on the role of cultural learning and schooling. His principal premise is that human beings are products not only of biology, but also of their human cultures. Intellectual functioning is the product of our social history, and language is the key mode by which we learn our cultures and through which we organize our verbal thinking and regulate our actions. Children learn such higher functioning from interacting with the adults and other children around them.

Inner speech

Children learn when they engage in activities and dialogue with others, usually adults or more capable peers. Children gradually internalize this dialogue so that it becomes inner speech, the means by which they direct their own behavior and thinking. For example, as adults use language such as, "That piece does not fit there; let's try it someplace else," children may initially just imitate this strategy. However, they gradually use it to regulate their own behavior in a variety of contexts. Eventually, this dialogue becomes internalized as inner speech.

There seems to be a general sequence in the development of speech for oneself. When alone, very young children tend to talk about what they have done after they complete an activity. Later, they talk as they work. Finally, they talk to themselves before they engage in an activity. Speech now has assumed a planning function. Later they internalize this speech. Inner speech —conversations we carry on with ourselves—begins as a social dialogue with other people and is a major mode of learning, planning, and self-regulation.

Various experiments demonstrate this self-regulating function of inner speech. Vygotsky reasoned that when people are asked to solve difficult problems or to perform difficult tasks, inner speech will go external, that is, take its more primitive form. In other words, people frequently talk to themselves when they face a problem. This externalization of inner speech is often observed in children. When they engage in familiar, simple activities, they usually do so without talk, but faced with difficult tasks, they may whisper or talk out loud to themselves. Adults do this, too. They often talk themselves through perplexing or unfamiliar tasks such as figuring out how to work a VCR.

Vygotsky noted that children interacting toward a common goal tend to regulate each other's actions. Other researchers (e.g., Forman & Cazden, 1986) have observed that when students work together on complex tasks, they assist each other in much the same way adults assist children. In such tasks, dialogue consists of mutual regulation. Together, they can solve difficult problems they cannot solve working independently.

Scaffolding and development

Effective caregivers engage in regulating dialogue with children almost naturally. A key phenomenon of such interactions is that caregivers maintain the dialogue just above the level where children can perform activities independently. As children learn, adults change the nature of their dialogue so that they continue to support the child but also give the child increasing responsibility for the task (for example, the adult might say, "Now see if you can find the next piece of the puzzle yourself."). Jerome Bruner and his colleagues called this *scaffolding*. It takes place within a child's *zone of proximal development*, a level or range in which a child can perform a task with help. (Piaget refers to this as "teachable moments" when adults stretch a child's capacity, but stay within what they are capable of understanding.)

The zone of proximal development, scaffolding, and dialogue are especially useful concepts or frameworks for school learning. Vygotsky observed that effective teachers plan and carry out learning activities within children's zones of proximal development, through dialogue and scaffolding. Florio-Ruane drew five maxims from studies of caregiver-child interactions that illustrate these points and should characterize school instruction.

1. Assume the child (learner) is competent
2. Know the child (learner)
3. Share an interest in the task at hand with the child (learner)
4. Follow the child's (learner's) lead
5. Capitalize on uncertainty

Very few teachers have the luxury of teaching children on a one-to-one basis. Fortunately, we now know that tutoring is not, in fact, the only—or even the best—way for students to learn in most situations. Dialogue, scaffolding, and working in one's zone of proximal development can be accomplished in collaborative classrooms, and are being accomplished in many classrooms today.

Connecting school learning to everyday life

Vygotsky also provides us with a framework for thinking about an important function of teaching and the multicultural perspective. His research suggests that school learning enables students to connect their "everyday concepts" to "scientific concepts." In other words, schools help students draw generalizations and construct meaning from their own experiences, knowledge, and strategies. Knowledge learned in the community and knowledge gained from school are both valuable. Neither can be ignored if students are to engage in meaningful learning.

Effective teachers help students make these connections by scaffolding and dialogue. In fact, these are the essence of mediating. Teachers plan learning activities at points where students are challenged. Teachers plan activities and experiments that build on the language of students' everyday

lives through familiar examples and behaviors, analogies and metaphors, and the use of commonly found materials. Teachers demonstrate, do parts of the task students cannot do, work collaboratively with students where they need help, and release responsibility to students when they can perform the task independently.

Planning Groupwork

Planning for cooperative learning activities is absolutely essential if cooperative groupwork is to succeed. The end result of a carefully planned program will well justify the time and effort invested. It is beyond the scope of this paper to give anything more than a brief overview of the key issues involved in implementing cooperative work-group learning. However, at the end of this chapter is a detailed list of resources where information, research, and training may be obtained.

Five general areas must be considered when planning groupwork (Cohen, 1986):

Deciding on how students will work together

Will they work in very structured tutoring pairs? Will they work at learning centers? Will they work in small teams? Will they be primarily engaged in drill and practice, group investigation, group discussion, or problem solving?

Deciding on the training program for developing cooperative skills

How will students learn the necessary cooperative skills? Will they learn cooperation while engaged in a cooperative activity? Or will you try to prepare them in advance with some direct instruction and modeling?

Deciding on the actual tasks your groups will perform

The tasks you choose will depend on what you want students to learn. However, there are guidelines that will increase the success of your choice. Select tasks that:

- Have more than one answer or more than one way to solve the problem
- Are intrinsically interesting and rewarding
- Allow different students to make different contributions
- Use multimedia
- Involve sight, sound, and touch
- Require a variety of skills and behaviors
- Require reading and writing
- Are challenging

Tasks do not work well for groupwork if they:

- Have unchallenging, single right answers
- Can be done more quickly and efficiently by one person than by a group
- Are too low level
- Involve simple memorization or routine learning

(If you implement cooperative learning through the structural approach of Kagan [1990], then you could begin with structures that require low-level learning.)

Lay the groundwork with great care

How are groups to be composed? How will you physically arrange the classroom? How and when will you assign students to groups?

Decide on how your cooperative learning will be evaluated

Will there be debriefing sessions after each strategy is tried? Will there be ongoing observation and feedback to work groups? Will students be interviewed?

The secret to successful implementation lies in clarity—students must understand what they are supposed to be doing and where they can turn for help if problems develop. Clarity is attained by having as simple a system as possible.

Much clarity is achieved through careful planning and by training in advance for roles and cooperation. The steps for developing such a management system are briefly summarized here (Cohen, 1986):

1. Cooperative norms need to be taught so students will know how they ought to behave and will enforce these behaviors in others.
2. Students should know which group they are in and where that group is supposed to be meeting; a minimum amount of time should be wasted in getting across this vital information.
3. Public and specific information about who is to play what role and what specific behaviors are expected should be available as described in the previous chapter.
4. Each group should have clear instructions for the task available to them as they work; this will do much to prevent students from having to turn to you as a source of knowledge.
5. Students should have a good, brief orientation from the teacher on the objectives of this task and the criteria for evaluation.

Conclusion

Adapting the classroom learning environment to the needs of students is a complex and demanding task, especially when teaching a multigrade class where diversity among classmates is extreme. But outside the classroom, diversity is the normal condition that characterizes life. People must learn to work well with a wide variety of individuals in many different social settings. No single best approach has been defined for problem solving, getting along with co-workers, or learning something new. People learn and manage their lives in a variety of ways. The multigrade classroom, with its wide range of student levels, reflects this real-life diversity better than any other classroom configuration. It is important that teaching methods and grouping patterns reflect the variability of the students being taught and help prepare them to live in our diverse and complex world. Therefore, it is vital, when planning for instruction, to determine the academic, social, and cultural needs of students and to devise plans that best meet those needs.

Of course, it is impossible to develop a unique instructional program that will reflect all these areas and characteristics of each student. But we can plan and organize instruction that will take into account the variability of our students. We know from research on classroom teaching that we often ignore these important student characteristics and forge ahead, teaching the way we were taught. We know that:

- Thirty to 40 percent of the students we teach need to move around, touch, or manipulate to learn best. They are kinesthetic or tactile learners.
- Thirty to 40 percent of the students we teach are visual learners. They need demonstration because they learn quickly through seeing, photographing, drawing, watching films, and real events.
- Students have environmental preferences such as time of day, the need for snacks, light, and placement of furniture, that affect their motivation, interest, and ability.
- Cultural and family influences can often be overlooked by the teacher. A child's language and cultural background can affect the usefulness of a particular strategy and inhibit the student's learning. For example, some Native Americans have customs and traditions that make it extremely difficult for a child to be selected for whole-class recitation. Some groups may find it difficult to work in small groups, while others may have trouble working alone.

And yet, most teaching is primarily auditory, with teaching being "done" to the students by a lecture-recitation mode of instruction. However, only about 25 percent of all children learn best by listening (Multnomah Education Service District, 1983).

In this book, we have described a variety of instructional methods and grouping strategies that should facilitate multigrade (or multiability) instruction. In no way has this been an exhaustive discussion. For those interested in more detail, a list of resources and references has been included. None of the methods and strategies described here are good or bad for all students, provided they are understood and used in an appropriate manner. This means careful, thorough planning and implementation using a variety of methods and strategies. As always, we must continually assess the impact our instructional practices have on student social and academic growth.

References

Allan, S.D. (1991). Ability-grouping research reviews: What do they say about grouping and the gifted? *Educational Leadership, 48*(6), 60–65.

Anderson, R.H. (1993). The return of the nongraded classroom. *Principal, 72*(3), 9–12.

Barell, J. (1995). *Teaching for thoughtfulness: Classroom strategies to enhance intellectual development* (2nd ed.). White Plains, NY: Longman.

Cohen, D.L. (1989, December 6). First stirrings of a new trend: Multi-age classrooms gain favor. *Education Week, 9*(14), 1, 13–14.

Cohen, E. (1986). *Designing groupwork: Strategies for the heterogeneous classroom* (pp. 207-209). New York, NY: Teachers College Press.

Coleman, J.S. (1987). Families and schools. *Educational Researcher, 16*(6), 32–38.

Cushman, K. (1993). *The case for mixed-age grouping.* Harvard, MA: Author.

Dillon, J.T. (1988). *Questioning and teaching: A manual of practice.* New York, NY: Teachers College Press.

Doyle, W. (1986). Classroom organization and management. In M.C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 592–431). New York, NY: Macmillan.

Feng, J. (1994). *Issues and trends in early childhood education.* Unpublished manuscript. (ERIC Document Reproduction Service No. ED 372 841)

Fogarty, M. (Ed.). (1979). *Small schools: Organization and teaching methods.* Brisbane, Queensland, Australia: North Brisbane College of Advanced Education. (ERIC Reproduction Service No. ED 223 395)

Forman, E.A., & Cazden, C.B. (1986). Exploring Vygotskian perspectives in education: The cognitive value of peer interaction. In J.V. Wertsch (Ed.), *Culture, communication, and cognition: Vygotskian perspectives.* New York, NY: Cambridge University Press.

Fox, M. (1997, April). *Strategies for developing multi-age classrooms.* Paper presented at the annual convention of the National Association of Elementary School Principals Association, San Antonio, TX.

Gaustad, J. (1992). Nongraded education: Mixed-age, integrated, and developmentally appropriate education for primary children [Special issue]. *OSSC Bulletin, 35*(7).

Good, T.L., & Brophy, J.E. (1987). *Looking in classrooms* (4th ed.). New York, NY: Harper & Row.

Goodlad, J.L. (1984). *A place called school: Prospects for the future.* New York, NY: McGraw-Hill.

Goodlad, J.I., & Anderson, R.H. (1987). *The nongraded elementary school* (Rev. ed.). New York, NY: Teachers College Press.

Griswold, C. (1987). *Topic development for multi-level classrooms, K-5: Incorporating essential learning skills.* Salem, OR: Oregon Department of Education.

Hallion, A.M. (1994, March). *Strategies for developing multi-age classrooms.* Paper presented at the annual convention of the National Association of Elementary School Principals Association, Orlando, FL.

Johnson, D.W., & Johnson, R.T. (1989). *Cooperation and competition: Theory and research.* Edina, MN: Interaction Book.

Kafai, Y.B., & Resnick, M. (Eds.). (1996). *Constructionism in practice: Designing, thinking, and learning in a digital world.* Mahwah, NJ: Lawrence Erlbaum.

Kagan, S. (1990). *Cooperative learning: Resources for teachers.* San Juan Capistrano, CA: Resources for Teachers.

Katz, L., Evangelou, D., & Hartman, J.A. (1990). *The case for mixed-age grouping in early education.* Washington, DC: National Association for the Education of Young Children.

Kinsey, S. (1998). *Observations of student and teacher behaviors in the multi-age classroom.* Unpublished manuscript.

Klein, M.F. (1982). Independent study. In H.E. Mitzel, J.H. Best, & W. Rabinowitz (Eds.), *Encyclopedia of educational research: Vol. 2* (5th ed., pp. 835–843). New York, NY: Free Press.

Kulik, C.C., & Kulik, J.A. (1982). Effects of ability grouping on secondary school students: A meta-analysis of evaluation findings. *American Educational Research Journal, 19*(3), 415–428.

Kulik, J.A., & Kulik, C.C. (1987). Effects of ability grouping on student achievement. *Equity and Excellence, 23*(1–2), 22–30.

Maccoby, E.E. (1992). The role of parents in the socialization of children: An historical overview. *Developmental Psychology, 28*(6), 1006–1017.

Marshak, D. (1994, March). *From teachers' perspectives: The social and psychological benefits of multiage elementary classrooms.* Paper presented at the annual conference "Emerging Images of Learning: World Perspectives for the New Millennium," Chicago, IL.

McClellan, D.E. (1994). Multiage grouping: Implications for education. In P. Chase & J. Doan (Eds.), *Full circle: A new look at multiage education* (pp. 147–166). Portsmouth, NH: Heinemann.

McClellan, D., & Kinsey, S. (1996). Mixed-age grouping helps children develop social skills and a sense of belonging. *The MAGnet Newsletter on Mixed-Age Grouping in Preschool and Elementary Settings, 5*(1), 1–3. Retrieved May 8, 2000 from the World Wide Web: www.ericeece.org/pubs/mag/magfal96.html#a

Miller, B.A. (1993). A review of the quantitative research on multigrade instruction. In D. Sumner (Ed.), *Multiage classrooms: The ungrading of America's schools. The multiage resource book* (pp. 65–83). Peterborough, NH: Society for Developmental Education.

Miller, B.A. (1996). A basic understanding of multiage grouping. *School Administrator, 53*(1), 12–17.

Multnomah Education Service District. (1983). *Goal guide: Tri-county course development project*. Portland, OR: Author.

Murphy, J., Weil, M., & McGreal, T. (1986). The basic practice model of instruction. *Elementary School Journal, 87*(1), 83–96.

Nebraska Department of Education & Iowa Department of Education. (1993). *The primary program: Growing and learning in the heartland*. Lincoln, NE: Nebraska Department of Education.

Negroponte, N., Resnick, M., & Cassell, J. (n.d.). *Creating a learning revolution* (Opinion Article No. 8). Cambridge, MA: Massachusetts Institute of Technology Media Laboratory. Retrieved September 21, 2000, from the World Wide Web: www.unesco.org/education/educprog/lwf/doc/portfolio/opinion8.htm

Nye, B. (1993). Some questions and answers about multiage grouping. *ERS Spectrum, 11*(3), 38–45.

Ridgway, L., & Lawton, I. (1969). *Family grouping in the primary school* (2nd ed.). New York, NY: Agathon Press.

Schunk, D.H. (1987). Peer models and children's behavioral change. *Review of Educational Research, 57*(2), 149–174.

Shank, R.C., & Cleary, C. (1995). *Engines for education*. Hillsdale, NJ: Lawrence Erlbaum.

Slavin, R.E. (1986a). Ability grouping and student achievement in elementary schools: A best evidence synthesis. *Review of Educational Research, 57*(3), 293–336.

Slavin, R.E. (1986b). *Using student team learning* (3rd ed.). Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools.

Stone, S.J. (1995). *The primary multiage classroom*. Changing schools for children. Unpublished manuscript.

Tinzman, B., Jones, B., Fennimore, J., Bakker, C., & Pierce, J. (1990). *What is the collaborative classroom?* Oak Brook, IL: North Central Regional Educational Laboratory.

Uphoff, J.K., & Evans, D.A. (1993). The country school comes to town: A case study of multiage grouping and teaching. In D. Sumner (Ed.), *Multiage classrooms: The ungrading of America's schools. The multiage resource book* (pp. 36–38). Peterborough, NH: Society for Developmental Education.

Vygotsky, L.S. (1978). *Mind in society.* Cambridge, MA: Harvard University Press.

Willis, S. (1991). Breaking down grade barriers: Interest on nongraded classrooms on the raise. *ASCD update, 33*(8), 4.

Resources

Blackwood, L. (1987). *More like a school family than just a teacher and his/her students: Is a one teacher school for you?* Anchorage, AK: L.C.'s Manner.

This booklet contains one teacher's opinion on "how to successfully and effectively teach in a small one-teacher school or other multigraded settings in rural Alaska." It also contains useful ideas and strategies that are beneficial to any multigrade teacher.

Available from:
L.C.'s Manner
2440 E. Tudor Road
Suite 950
Anchorage, AK 99507

Cohen, E. (1986). *Designing groupwork: Strategies for the heterogeneous classroom* (pp. 207–209). New York, NY: Teachers College Press.

This handbook provides strategies for starting groupwork in your classroom and details the research supporting cooperative workgroups. The book is written in a direct, clear style that makes reading easy.

Available from:
Teachers College Press
Columbia University
New York, NY 10027

Dyer, T.A. (1989). *Teaching splits: Strategies for combination classrooms.* Unpublished manuscript.

The research paper describes what teachers of combined grades do to successfully cope with a two-grade classroom. Dyer visited more than 10 combination classrooms and interviewed the teachers. This report summarizes his findings.

Available from:
Thomas Dyer
PO Box 47
Bly, OR 97622

Good, T.L., & Brophy, J.E. (1987). *Looking in classrooms* (4th ed.). New York, NY: Harper & Row.

This book may be one of the most exhaustive collections of effective teaching information to date. Filled with practical, concrete ideas and strategies drawn from observations of effective teachers, this book is important for every professional library.

Available from: Harper and Row Publishers
Keystone Industrial Park
Scranton, PA 18512

Griswold, C. (1987). *Topic development for multi-level classrooms, K-5: Incorporating essential learning skills.* Salem, OR: Oregon Department of Education.

This booklet was developed for the Oregon Department of Education as a resource for helping multigrade teachers integrate essential learning skills across subject areas. Griswold provides sample integrated lessons along with a guide for developing your own lessons.

Available from: Oregon Department of Education
Public Service Building
255 Capitol Street NE
Salem, OR 97310

Hornbeck, D. (1990). *Recommendations related to curriculum.* Frankfort, KY: Legislative Research Commision.

This handbook focuses on instructional organization within the context of curriculum, designing the elements and responsibilities of curriculum organization, its structure, and basic planning consideration for use in the multigrade classroom.

Available from: Kentucky Department of Education
500 Mero Street, 17th Floor
Frankfort, KY 40601

Joyce, B.R., & Weil, M. (1986). *Models of teaching*. Englewood Cliffs, NJ: Prentice Hall.

This book reviews the most common models of teaching, including detailed examples and strategies for implementing each model. Examples of models included are inquiry, concept attainment, inductive thinking, group investigation, and so forth.

Available from: Prentice-Hall, Inc.
200 Old Tappan Road
Old Tappan, NJ 07675

Kagan, S. (1990). *Cooperative learning: Resources for teachers*. San Juan Capistrano, CA: Resources for Teachers.

This book provides a detailed guide for implementing the structural approach to cooperative learning. It includes a guide to resources in cooperative learning and an overview of cooperative learning research. There is a wealth of concrete strategies teachers can use.

Available from: Resources for Teachers
27134 Paseo Espada #202
San Juan Capistrano, CA 92675

Katz, L.G. (1995). *The benefits of mixed-age grouping* [ERIC digest]. Urbana, IL: ERIC Clearinghouse on Elementary and Early Childhood Education. (ERIC Document Reproduction Service No. ED 382 411)

This report addresses issues relating to small school organization. Sections regarding the teaching of reading, mathematics, social studies, science, physical education, language arts, and art are presented. Aspects such as objectives, content, methodologies, organizing time and space, and resources are also discussed.

Available from: ERIC
3900 Wheeler Avenue
Alexandria, VA 22304-6409

Katz, L.G. (1996). Addressing the potential risks of mixed-age grouping. *MAGnet Newsletter on Mixed-Age Grouping in Preschool and Elementary Settings,* 5(1). Retrieved September 27, 2000, from the World Wide Web: www.ericeece.org/pubs/mag/magfal96.html#c

Every method of grouping children has risks. One concern with mixed-age grouping is ensuring that younger children are not overwhelmed by older or more competent ones. This book discusses the roles and responsibilities teachers have in maximizing the potential benefits of the age mixture by encouraging children to turn to each other for explanations, directions, and comfort. Teachers are also encouraged to let older children read stories to younger ones, and to listen to younger students read.

Available from:
ERIC
3900 Wheeler Avenue
Alexandria, VA 22304-6409

Oldfield, M.J. (1963). *Tell and draw stories.* Minneapolis, MN: Creative Storytime Press.

This book was recommended by Joel Anderson, a multigrade teacher from Onion Creek School in northeast Washington. Anderson says this is an excellent resource for writing activities.

Available from:
Creative Storytime Press
PO Box 572
Minneapolis, MN 55454

Slavin, R.E. (1986). *Using student team learning* (3rd ed.). Baltimore, MD: Johns Hopkins University, Center for Research on Elementary and Middle Schools.

This teacher's manual describes a set of practical instructional techniques that involve students in cooperative activities built around the learning of school subjects. These are techniques developed and researched at Johns Hopkins University, plus related methods developed elsewhere.

Available from:
The Johns Hopkins Team Learning Project
Center for Research on Elementary and
Middle Schools
Johns Hopkins University
3505 North Charles Street
Baltimore, MD 21218

Stone, S.J., & Christie, J.F. (1996). Collaborative literacy: Learning during sociodramatic play in a multiage (K–12) primary classroom. *Journal of Research in Childhood Education, 10*(2), 123–133.

This article reviews collaborative grouping strategies, outlining characteristics of a collaborative classroom, teacher's roles, and challenges and conflicts within collaborative classrooms. It provides specific information on how to develop collaborative partnerships in the classroom.

Vail, N.J., & Papenfuss, J.F. (1982). *Daily oral language*. Racine, WI: D.O.L.

Daily Oral Language is recommended by numerous multigrade teachers. It is a booklet of sentences that need to be edited and rewritten. The teachers who recommended it said they used them as a daily "sponge" or warm-up activity before lessons began.

Available from: D.O.L. Publications
1001 Kingston Avenue
Racine, WI 53402

Villa, R., & Thousand, J. (1993). Enhancing success in heterogeneous classrooms and schools: The powers of partnership. In D. Summer (Ed.), *Multiage classrooms: The ungrading of America's schools. The multiage resource book* (pp. 51–61). Peterborough, NH: Society for Developmental Education.

The authors present the underlying concepts regarding cooperative learning. Steps for implementing cooperation in your classroom and the research supporting it are also presented.

Available from: Society for Developmental Education
125 N. West Street
Peterborough, NH 63452

Northwest Regional Educational Laboratory
Rural Education Program
101 S.W. Main, Suite 500
Portland, OR 97204-3297
(503) 275-0546
www.nwrel.org

BEST COPY AVAILABLE